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OUR

DOMESTIC FOWLS.

BY

W. C. L. MARTIN.

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OUR DOMESTIC FOWLS.

INTRODUCTION.

The only history of man in his primeval condition is that contained in the book of *Genesis*. The records of that book — the truthfulness of which modern discoveries tend more and more to confirm, (irrespective of the claim, which its internal evidence justifies, to the pen of inspiration,)—show us that our primitive forefathers were far removed from that debased condition in which we now find the natives of Australia, or some of the Papuan islands. They were not savages—nor is a savage state of existence natural to man; it is not that to which he necessarily and at once descended after the fall; it is not that for which the Almighty destined his species; but, nevertheless, it is a state into which tribes and people have degenerated. At the same time, they are not without the capa-

bility of emerging from it, and taking that station in which the fiat of God placed man when he bade him "replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." This dominion over the lower orders of creation, which the real savage cannot be said rightly to exercise, was not abrogated after the fall, but appears rather to have been put into active operation immediately; for we read of the skins of slain animals—probably of those offered up in sacrifice—being made use of for garments, and of Abel, who is expressly stated to have been a keeper of sheep, bringing "of the firstlings of his flock, and of the fat thereof," as an offering to the Lord. Here we have a proof of the early domestication of the sheep; and soon after we read of Jabal, that he was "the father of such as dwell in tents, and of such as have cattle." We have, now, oxen and sheep recorded as being domesticated, doubtless from a sense of their value; and perhaps, though no mention is made of it, the faithful dog may have been their guardian against the ferocious beasts of prey. The very circumstance of man's suc-

cessful attempt at the subjugation of animals serviceable to his interests, and constituting his riches, to say nothing of his commencing artificer in brass (copper) and iron, and his construction of musical instruments, proves that, in the infancy of the species, he was quick to discern, prompt to execute, skilful in operations, and anxious to extend the sphere of his actions. Doomed to "the toil and work of his hands, because of the ground which the Lord had cursed," he sat not down in savage sloth and supineness, but, mustering his energies, both of mind and body, began his career of improvement. After the deluge, we read of Noah practising the arts of husbandry, planting vines, and producing wine from the juice of the grape, and we have some reason to believe that he not only possessed flocks of sheep, and herds of cattle, but even camels and asses. Of Abraham we read that he was rich in flocks and herds, and in silver and gold. He had goats, also, and it is unquestionable that, in his day, the ass and camel were domesticated, for these animals are enumerated among the riches of the Pharaoh, king of Egypt, whom he went to visit during a time of famine.

It is not until a later period that we read of the horse, namely, under the rule of Joseph in Egypt, when "he gave them bread in exchange for horses, and for the flocks, and for the cattle of the herds, and for the asses." But this notice, in conjunction with another in Genesis xlix. 17, "Dan shall be a serpent in the way, an adder in the path, that biteth the horse's heels, so that his rider shall fall backward," proves that, in some districts at least, this animal had been subjugated: and we know that, on the departure of the Israelites from Egypt, the monarch pursued them with horsemen and chariots. Horses are subsequently noticed abundantly, as are also mules; nor need we refer our reader to the numerous passages in which distinct mention is made of them.

With respect to the dog, the first direct allusion to it is in Exodus xi. 7: "But against any of the children of Israel shall not a dog move his tongue;" and we need not say that it was inserted by Moses in the list of unclean animals, with directions concerning the flesh of torn beasts, which was to be thrown to the dogs. Swine were placed in the catalogue of unclean animals by the Mosaic ritual, and

other nations regarded the hog not only as unfit for food, but even as defiling the person with whom it came in contact; yet, from this very prohibition of its flesh, we infer that it was kept in a domesticated state by many tribes, anterior to the time of Moses, though we have no previous notice of it.

No mention of the cat * occurs in the Scriptures; but with this exception,—and it need scarcely be said, that of the llama, peculiar to the Andes of the American continent, that of the elephant, of the buffalo of India, and of the rein-deer of the arctic circle—all our domestic quadrupeds are noticed as being already subdued to man's use anterior to the time of Moses—we may say anterior to the time of Abraham. In this list, we do not include the mule—the hybrid progeny of the ass and mare, which was, perhaps, not known until a somewhat later period than the remote age of which we are speaking. In fact, the most valuable of our quadrupeds are those which were the first domesticated; and of this fact,

* The Egyptians certainly had a cat, or small feline animal, domesticated, and, as a painting in the British Museum proves, trained to assist the fowler in catching birds. The painting, with others, was taken from the walls of the grotto in the western hill of Thebes.

while its main design is to show us man's origin and fall, the spread of our race, and the separation of the Israelites from other nations as a peculiar people, the earlier portion of the Old Testament clearly informs us; nor could this information, so interesting to the naturalist, be gained from any other source, —not even from the sculptured remains of the Egyptians.

But while our attention is called to the domestic quadrupeds, sheep, goats, oxen, dogs, camels, asses, and horses, at a more or less remote period, it may appear somewhat strange at first, that we find no distinct allusion to any domestic creatures of the feathered race, though at a distant date, as paintings abundantly prove, numbers of geese and ducks were kept by the Egyptians, who esteemed their flesh as food.* Perhaps the pigeon may be excepted. We read of a turtle-dove, and "young pigeon" as being sacrificed by Abraham in Gen. xv. 9; and we read in the Levitical law, that, instead of a lamb, the poor were permitted to bring as an offering "two turtle-doves or

* Herodotus observes that the Egyptians eat quails, ducks, and small birds, without cooking them, having first put them in salt.

two young pigeons," such as he is able to get, whence it is not improbable that domestic pigeons were reared at an early, though not very remote period, if not for food, for the appointed offerings and sacrifices; but of this we are by no means sure, nor unless the birds were kept in cages, which we do not hear, could their domestication be effected by a nomadic people. This observation is equally applicable to other species of the feathered tribes. Domestic poultry necessarily require a settled state of society, the permanent occupation of dwellings, a fixed residence, a definite possession of the land, an exchange of camps and migrations in search of pasturage for permanent villages and systematic agriculture. Hence, though the Egyptians might possess various domestic birds, coming under the general title of poultry, and though these might be known to the patriarchs, still, as they were not among their possessions, and for obvious reasons could not be, we cannot be surprised that the Old Testament, in the earlier books, makes no mention of them. When, indeed, the Israelitish nation became established, and its power consolidated, the stronghold of Zion being won from the

Jebusites, and the power of the Philistines utterly destroyed, then we might expect to hear of the rise of the arts of civil life, of commerce, and of its attendant circumstances. David established the Israelitish kingdom. His son Solomon, who succeeded him, ascended the throne in peace, and immediately began to extend commerce, to patronize science, to build and plant, and accumulated treasures. His own words are, "I made me great works; I builded me houses; I planted me vineyards: I made me gardens and orchards, and I planted trees in them of all kinds of fruits: I made me pools of water, to water therewith the wood that bringeth forth trees (growing plantations): I got me servants and maidens, and had servants born in my house; also I had great possessions of great and small cattle above all that were in Jerusalem before me: I gathered me also silver and gold, and the peculiar (precious) treasure of kings and of the provinces: I gat me men-singers and women-singers, and the delights of the sons of men, as musical instruments and that of all sorts. So I was great and increased more than all that were before me in Jerusalem: also my wisdom remained with me." Eccles. ii.

4—9. Elsewhere we read of the monarch's acquirements in natural history, and have reason to believe that he wrote on the subject, though the works are lost. We know that he procured ivory, apes, and peacocks, by means of the ships of Tarshish, which returned every three years from the remote east, laden with treasures. Other remarkable animals, and, no doubt, beautiful plants, and other curious productions of the distant countries visited by the fleet, were brought for the scientific monarch, as conducive to the establishment of a menagerie, and the ornament of his gardens, as well as the increase of his wealth. We have noticed the peacock, a native of India, as one of the importations, and a beautiful ornament it was to the court-yards, the lawns, and gardens of the palace. This bird, however, was known at a far earlier period,* for it is briefly alluded to in the same chapter (39th) of the book of Job, as that in which the wild ass and the war-horse are so finely depicted; but, in the time of Solomon, it must have been tolerably abundant, and in

* Perhaps its feathers only had reached western Asia, by some circuitous route from India, and not the bird itself. European naturalists were acquainted with the elegant plumes of many birds, long before they were able to acquire specimens.

no mention is made of them, nor know we whether they were allowed to be eaten or not; it is very probable that all web-footed swimming birds might be included under the term swan, (*tinshemeth,*) granting that bird* to be really intended and therefore prohibited. Both tame geese and ducks in the present day are rarely to be met with in Syria, or western Asia generally. They are not in demand among the Moslems, who rarely eat them.

With respect to those domestic birds, originally imported from central Africa or America, as the Guinea-fowl and turkey, we cannot, as a matter of course, find any allusion to them in the Scriptures; but it is somewhat strange that the pheasant, from the borders of the Phasis and the country around the Euxine, and so remarkable for beauty, should not be noticed. We think, however, that an easy explanation may be given: when the waters of the deluge were assuaging, Noah selected two birds by way of experiment, the raven and the dove; the ark was left dry on mount Ararat, probably in Armenia; we have

* Michaelis and Parkhurst think the goose is intended, others the *Hyacinthine gallinule*, a beautiful bird allied to the water-hen.

then a brief narrative of a series of important events, extending over a period of about 327 years, and a list of generations, till we come to the injunction laid upon Abraham to leave his country and kindred; he passed with Lot unto the land of Canaan, and thence into Egypt, with flocks and herds, his property; thenceforth he and his descendants led a nomadic life in Syria and Arabia, feeding their flocks and herds, their asses and camels. Consequently, that neither this elegant bird,* nor any other, excepting turtle-doves and young pigeons, common in Syria, and used as offerings, should be alluded to in the history of the patriarchs, may be readily accounted for. Subsequently it might have been known to Solomon, but of this we cannot be certain.

Thus, then, referring to the oldest authentic records which we possess, have we endeavoured to deduce from scattered notices, the early condition of man on the globe, the necessity

* It is among the people who emigrated westward from Asia Minor, that the first notice of the pheasant occurs, and this is what might be expected. The Greeks attribute its introduction into Greece to Jason, a hero of the fabulous period of classic history, who undertook what is termed the Argonautic expedition, and procured it in Colchis, on the banks of the Phasis, the present Faz, or Rion. The date of the Argonautic expedition is placed by Newton, B.C. 937; by Blair, B.C. 1263.

which impelled him, and the skill which aided him to subjugate certain animals essential to his well-being. It has been shown that there were quadrupeds constituting to the present moment the most valuable of civilized man's possessions, flocks and herds—the dog, the ass, the horse, and the camel. We have expressed an opinion that it was not until tribes became stationary, cultivating the soil, and engaging in commerce, that the domestication of any of the feathered tribes began; and even that nomadic people, though well aware of such domestic poultry being possessed by the dwellers of towns, and villages, and settled farms, could not if they wished it keep them, from the very circumstances of their habits,—whereas, with respect to the quadrupeds alluded to, the very opposite would be the case.

In the creation of animals, whether quadrupeds or birds, expressly serviceable to man, and so highly conducive to his prosperity, and, at the same time, so easily subjugated or tamed, we cannot but see the wisdom and goodness of Divine Providence. We know not, it is true, the means employed by man in the infancy of society in reclaiming the original

wild stocks, but we know that it was accomplished, and we see that one animal after another was added to the catalogue of his humble subjects, while, at the same time, empires were in their dawn, cities arose, political power became concentrated in various given localities; the interchange of national productions gave impetus to improvement; and the finer arts of life became developed from the rude germs of their primordial origin. At what precise point of time, or under what peculiar circumstances, our domestic animals respectively yielded to man's great mastery, and submitted to his service, are points buried in oblivion; nor is it needful that they should be minutely ascertained. We know enough to feel that, in these conquests, of more solid benefit than those of the sword, we are presented with important considerations in the history of our species. And thus are we led to the axiom with which we started, that man began his career, not, as some philosophers tell us, in the character of a degraded savage, but in that of a benefactor to futurity.

In the present work, we shall confine our observations to those of the feathered race which come under the general name of

Domestic Poultry. We shall endeavour to treat the subject in a popular and interesting manner, divesting scientific details of that obscurity which, from the use of technicalities, the general reader too frequently complains is thrown around them.

DOMESTIC POULTRY.

Domestic poultry may be divided into three distinct groups,—first, the Gallinaceous group, of which the fowl, peacock, turkey, etc., are examples; secondly, the Columbine, or pigeon group, of which our domestic species are limited in number; and thirdly, the Aquatic group, domestic waterfowl, of which the swan, duck, and goose are familiar examples.

In habits, manners, instincts, and structural peculiarities, these three groups differ in very essential particulars.

THE GALLINACEOUS GROUP.

Though many of the gallinaceous birds perch on trees, yet, in their characteristic habits they are birds of the ground; it is there that they search for their food, which consists of grains, seeds, root, especially those

of a bulbous nature, berries, the tender tops of vegetables, not excluding insects, and their larvæ, worms, and the like. Their limbs are strong and muscular, enabling them to run with ease; the tarsi or legs are covered with strong scales, and, in the males of many species, are armed with a sharp horny spur. The three anterior toes are furnished with strong claws, the hind toe is short, its point only touching the ground, and in some species it is wanting. From the muscularity of the limbs and the strength of the claws, the birds of this group are for the most part capable of scratching up the surface of the ground in quest of grains or insects; many delight to throw the dust over their plumage, and wallow in the dry gravel or sandy earth. Swampy, humid situations are their aversion, and a continuance of heavy rains renders them dull and dispirited. As might be inferred from the nature of their food, the gallinaceous birds have a stout horny beak, with a tough membrane at the base, in which the nostrils are situated. The form of the body is plump, stout, and broad, with an ample breast. The powers of flight are very moderate, and in most the wings are short, concave, and

rounded. In some, however, as the grouse tribe, they are pointed; but even in these flight is not performed without considerable exertion, and a rapid vibration of the wings, accompanied by a loud whirring. To those who have "put up" pheasants or coveys of partridges this almost startling sound is familiar.

In the gallinaceous group there is a great tendency to the development of naked combs and wattles, and various naked fleshy or membranous caruncles about the head; the fowl has a comb, wattles, and a naked space on the sides of the cheeks; but in the turkey we see the naked carunculated appendages much more extensive.

To the present group of birds one particularity in their internal structure is a strong muscular gizzard, lined with a tough leathery membrane. By the action of the two thick muscular sides of this gizzard on each other, the seeds and grains swallowed, (and previously macerated in the crop, and there softened by a peculiar secretion oozing from glandular pores,) are ground up, or triturated, in order that their due digestion may take place. It is a remarkable fact that these birds are in the habit of swallowing

small pebbles, bits of gravel, and similar substances, which it would seem are essential to their health. The definite use of these substances, which are certainly ground down by the mill-like action of the gizzard, has been a matter of difference among various physiologists, and many experiments, with a view to elucidate the subject, have been undertaken. It was sufficiently proved by Spallanzani that the digestive fluid was incapable of dissolving grains of barley, etc., in their unbruised state, and this he ascertained by filling small hollow and perforated balls and tubes of metal or glass with grain, and causing them to be swallowed by turkeys and other fowls; when examined, after twenty-four and forty-eight hours, the grains were found to be unaffected by the gastric fluid; but when he filled similar balls and tubes with bruised grains, and caused them to be swallowed, he found, after a lapse of the same number of hours, that they were more or less dissolved by the action of the gastric juice. In other experiments, he found that metallic tubes introduced at the gizzard of common fowls and turkeys, were bruised, crushed, and distorted, and even that sharp-cutting instruments were broken

up into blunt fragments, without having produced the slightest injury to the gizzard. But these experiments go rather to prove the extraordinary force and grinding powers of the gizzard, than to throw light upon the positive use of the pebbles swallowed; which, after all, Spallanzani thought were swallowed without any definite object, but from mere stupidity. Blumenbach and Dr. Bostock aver that fowls, however well supplied with food, grow lean without them, and to this we can bear our own testimony. Yet the question, what is their precise effect, remains to be answered. Boerhaave thought it probable that they might act as absorbents to superabundant acid; others have regarded them as irritants or stimulants to digestion; and Borelli supposed that they might really contribute some degree of nutriment. John Hunter, in his treatise "On the Animal Economy," after noticing the grinding powers of the gizzard, says, in reference to the pebbles swallowed, "We are not, however, to conclude that stones are entirely useless; for if we compare the strength of the muscles of the jaws of animals who masticate their food, with those of birds who do not, we shall say that the parts are well calculated for

the purpose of mastication; yet we are not thence to infer that the teeth in such jaws are useless, even although we have proof that the gums do the business when the teeth are gone. If pebbles are of use, which we may reasonably conclude they are, birds have an advantage over animals having teeth, so far as pebbles are always to be found, while the teeth are not renewed. If we constantly find in an organ, substances which can only be subservient to the functions of that organ, should we deny their use, although the part can do its office without them? The stones assist in grinding down the grain, and, by separating its parts, allow the gastric juice to come more readily in contact with it."

This we believe to be the true theory,—the pebbles assist in crushing the grain, and at the same time prevent it from consolidating into a thick, heavy, compacted mass, which would take a far longer time in undergoing the digestive process, than when separated and intermingled with the pebbles.

The gallinaceous birds are very prolific, and most are polygamous. The nest is, as a rule, made upon the ground; the young are hatched covered with down, and in a few hours are

capable of running about, and following their parent; they pick up their food, to which the mother conducts them, without having to be fed like the young of the finches and warblers in their snug nests, till they acquire the power of flitting about. They repose at night huddled up beneath their parent's wings.

The males of the species composing the present group are extremely pugnacious, and will often fight with each other to the death of one of the rivals. The game-cock, the jungle-cock, the pheasant, and the quail, are notorious for their combative propensities. The females are devoted to their broods, and lose all sense of personal danger in their defence; a hen will fly boldly in the face of a dog, and even the timid partridge will fight for its young. Mr. Selby records an instance in which a pair of partridges (for these birds are not polygamous) attacked a crow which had attempted to seize one of their brood; they fought not only courageously but successfully, for they actually fastened upon and held their sable adversary; and so absorbed were they in the strife, that they persisted in their hold till the spectator of the combat came to their aid, and seized upon the mis-

creant. Upon search, the young birds were found concealed in the grass around the scene of action. Of none of the gallinaceous birds is the flesh unfit for food. That of many is a delicacy, and at the same time highly nutritive and easily digestible. Pheasants, partridges, quails, and grouse need no recommendation.

THE COMMON FOWL.

The common fowl, (*Gallus domesticus*—Ray.*) This valuable domestic bird, of which the varieties are extremely numerous, is doubtless derived from some of the wild or jungle fowls of India, and is, perhaps, crossed by more than one species. At what period, or by what people the wild jungle-fowl was reclaimed and brought to become a pensioner on the bounty of man, we have no means of ascertaining.

* In the restricted genus, (*Gallus*) the head is ornamented in the male, and generally in the female, with a naked comb, single in the jungle-fowls and game domestic races, but in many domestic breeds double, or spread in a rose shape. Wattles, two. Spurs in the male. The tail consists of fourteen feathers, forming two vertical planes, making what is called a folded tail. In the male, the middle feathers are the longest, and fall over the others in a graceful arch. In some domestic breeds, the comb is small, and the top of the head elegantly plumed with a tuft of feathers.

But as the writers of antiquity speak of it as a bird long domesticated in their days, and extensively spread, we may justly conclude that its subjugation ranks amongst the remote of man's peaceful conquests over the animal kingdom. Its domestication was probably first achieved in India, while, at the same time, in Malay, another species known as the Malay gigantic fowl, might have been also subjugated, and from these points distinct races, soon intermingling together, might have radiated.

And here, perhaps, we may be permitted to take a review of the wild birds or species which may have contributed to the domestic varieties.

1st. The Malay gigantic fowl, (*Gallus giganteus*—Temminck.) This large and very remarkable species is a native of Java and Sumatra. The male bird in its natural attitude exceeds two feet in height, measuring from the top of the head to the ground. The comb is thick, and low, and destitute of serrations, appearing as if it had been partially cut off, the wattles are small, and the throat is bare. The neck is covered with elongated feathers or hackles, of a pale golden reddish colour, which advance upon the back, and

hackles of the same colour cover the rump, and drop on each side of the base of the tail. The middle of the back and the shoulders of the wings are of a dark chestnut, the feathers being of a loose texture. The greater wing coverts are of a glossy green, and form a bar of that colour across the wing. The primary and secondary quill feathers are yellowish, with a tinge of rufous. The tail feathers are of a glossy green. The under surface uniformly is of a glossy blackish green, but the base of each feather is a chestnut, and this colour appears on the least derangement of the plumage. The limbs are remarkably stout, and the robust tarsi are of a yellow colour. The voice is a sort of crow—hoarse and short, and very different from the clear notes of defiance uttered by our farmyard chanticleer. This species has the habit, when fatigued, of resting on the tarsi or legs, as we have seen the emu do under similar circumstances.

In some parts of continental India, this bird is domesticated, and is known to Europeans under the name of the Kulm Cock. In the proceedings of the Zool. Soc. for 1832, p. 151, we find the following notice respecting it by colonel Sykes, who observed it domesti-

cated in the Dukhun (Deccan.) "*Gallus giganteus*, Temm.; *Gall. Ind.* 633: known by the name of the Kulm Cock by Europeans in India. Met with only as a domestic bird; and colonel Sykes has reason to believe that it is not a native of India, but has been introduced by the Mussulmans from Sumatra or Java. The iris of the real game-bird should be whitish or straw yellow. Colonel Sykes landed two cocks and a hen in England, in June, 1831. They bore the winter well; the hen laid freely, and has reared two broods of chickens. The cock has not the shrill clear pipe of the domestic bird, and his scale of notes appears more limited. A cock in the possession of colonel Sykes, stood twenty-six inches high to the crown of the head; but they attain a greater height. Length from the tip of the bill to the insertion of the tail, twenty-three inches. Hen, one-third smaller than the male. Shaw very justly describes the habit of the cock, of resting when tired on the first joint of the leg."

Within the last few years, other examples of this giant race have been brought to England, and we believe that the breed is kept up in the royal aviary at Windsor. The various

specimens which we have seen, some of very large size, had little in our eyes, stature excepted, to recommend them;—their contour seemed to be destitute of compactness, there was no energy in their movements;—the proud strut, the spirited action, the elegant symmetry, the animated aspect, so conspicuous in the high-bred game race of our country, or some of the bold but diminutive bantam breeds, was wanting.

2ndly. The Javanese jungle-fowl, (*Gallus Bankiva.*) This species, the Ayam-utan of the Malays, is a native of Java; but either a variety or a distinct species of larger size, yet very similar in colouring, is found in continental India. The Javanese or Bankiva jungle-fowl, is about the size of an ordinary bantam, and in plumage resembles the black-breasted red game-bird of our country, with a steel-blue mark across the wings. The comb is high, its edge is deeply serrated, and the wattles are rather large. The hackle feathers of the neck and rump are long and of a glossy golden orange; the shoulders are chestnut red, the greater wing-coverts deep steel-blue, the quill-feathers brownish black, edged with pale reddish yellow, or sandy red. The tail is of a

black colour with metallic reflections of green and blue. The under parts are black. The naked space round the eyes, the comb, and wattles are scarlet. The hen closely resembles a brown hen of the game breed, except in being very much smaller. That this bird, or its continental ally, is one of the sources—perhaps the main source—of our domestic race, cannot be doubted. It inter-breeds freely with our common poultry, and the progeny is fertile. Most beautiful cross-breeds between the Bankiva jungle-fowl and bantam may be seen in the gardens of the Zoological Society.

3dly. Sonnerat's jungle-fowl, (*Gallus Sonneratii*.) This is the common jungle-fowl of continental India; it inhabits the woods, and is shy and vigilant. It exceeds in size the Bankiva jungle-fowl, and in plumage and symmetry is very beautiful. For spirit and determination in combat it is highly celebrated, insomuch that Mussulman natives of India, who enter into the barbarous sport of cock fighting with incredible eagerness, are anxious to procure birds of this species, which they will match against others of the ordinary game breed, confident of the victory. It is easily domesticated; and living specimens are gene-

rally to be seen in the gardens of the Zoological Society.

In this splendid species, the comb of the male is large with its margin serrated; the wattles are rather ample, the hackles of the neck, and lower part of the back, and the wing coverts on the shoulders, have the shafts expanded into a thin cartilaginous, or rather horny plate, of a bright golden yellow, with a rich metallic gloss. These plates vary in shape, being in some feathers angular, in others oval, or almost circular. The plumage on the middle of the back, the breast, and under parts generally is a deep grey, each feather having a paler margin. The tail is of deep rich glossy green, with varied metallic reflections; bill and legs yellow. The females which have come under our notice were smaller than the males,—of a rich brown colour, beautifully speckled and marbled with darker pencillings: neither comb nor wattles were very apparent. In reference to Sonnerat's jungle fowl, we find the following details in the proceedings of the Zoological Society, 1832, p. 151. This bird, observes colonel Sykes, is the Rahn Komrah of the Mahrattas. It is "very abundant in the woods of the western Ghauts, where

there are either two species or two very strongly marked varieties. In the valleys, at 2,000 feet above the sea, Sonnerat's species is found, slender, standing high on the legs, and with the yellow cartilaginous spots on the feathers, even *in the female*. In the belts of woods on the sides of mountains at 4,000 feet above the sea there is a short-legged variety; the male has a great deal of red in his plumage, which Sonnerat's has not; the female is of a reddish brown colour, and is without cartilaginous spots at all. In fact, the female of this variety is the *Gallus Stanleyii* of Mr. Gray's "Illustrations," eggs exactly like those of the domestic fowl in form and colour, but less in size. The wild hen would appear to sit on a much smaller number of eggs than the domestic, as colonel Sykes shot a hen upon her nest, in which were only three eggs, and the process of incubation had evidently commenced some days.* In the craw and stomach of many birds, nothing whatever was found excepting the seeds of a stone-like hardness, called Job's tears, (*Coix barbata,*) Irides brownish deep

* This might have been an accidental circumstance, and a single instance is no proof that the wild hen sits on fewer eggs, or rears a less numerous progeny, than her domestic relative.

orange. The crow, or call of this species is like that of the bantam cock." "Many of the (domestic) hens, particularly in the villages of the Ghauts, are not to be distinguished from the wild bird (Sonnerat's) excepting only in the want of the cartilaginous spot on the wing coverts."

Captain Thomas Skinner, in his Excursions in India, (1832,) thus notices the jungle-fowl, (Sonnerat's) which he met with in abundance. "In some parts of the forest, we saw several jungle-fowl; they have the same habits as the domestic poultry; the cock struts at the head of his hens, and keeps a strict watch over their safety. Whenever they were disturbed by our attempts upon them, he flew to the highest branch of some tree beyond our reach, and crowed with all his might, while his dames ran into holes and corners to escape our attacks; they are so cunning that we found it impossible to get within shot of them, with all the caution we could use."

An amusing writer on "Sporting Scenes in India," (N. M. Mag., 1829, p. 234,) speaking of the wild jungle-fowls, says that the sportsman may be successful in his attempts, "by ascertaining from successive cries the way they

walk, and hurrying through the cover by a circuitous route, so as to intercept them; but this requires a certain tact. The slightest stir, and often the keenness of the bird's sight, for they come slowly and look well around, as they strut, and flap their wings and challenge, are enough to discover the sportsman, when the crowing ceases, and they are off at a hopeless rate." He adds, "these birds are the aboriginal cock and hen, but neither their cry nor their plumage is that of the domestic fowl."

The capture of these birds, and also of other animals, is carried on by natives of a low caste, who gain a livelihood by this despised occupation. Johnson, in his "Sketches of Field Sports, as followed by the natives of India," informs us that "two or three of these men go for that purpose together, and proceed in this manner.—A line of thirty or forty yards long is fastened to the ground with wooden pegs at each extremity, and is then elevated by props to the height of about eighteen inches. To this line nooses of horse hair are fastened at distances of about two feet from each other, and when the birds attempt to pass under the line, they are caught in the nooses by their necks. Sometimes a similar

line is fastened to the ground and left lying there, with all the nooses spread, and as the birds pass over them they are caught by the legs. These lines are never spread where there is much jungle. When the line or lines are ready, the men go off to a considerable distance and beat the bushes in a direction towards them."

We may here allude to some other species of jungle-fowl, as the fork-tailed cock of Java, (*Gallus furcatus*—Temm.) which has the throat adorned with only a single large wattle, springing from the centre, and the bronzed cock of Sumatra, (*Gallus æneus,*) which has a large comb, smooth along the ridge, and destitute of serrations. Neither of these birds has true hackles on the neck.

Another species is the fire-backed pheasant, (*Euplocamus ignitus*—Temm.) This is a large species, standing high on the legs, with full crest on the head, and short feathers on the neck. The tail of the cock is folded as usual, but the first two feathers instead of being long, slender, and bending down, scarcely exceed the rest, are broad, and just curved, reminding us of the tail of a high-bred bantam-cock, of sir John Sebright's spangled breed. General

plumage black, with reflections of steel blue, lower part of the back bright red, extending thence, like a zone round the body; the middle tail feathers white, the rest black, with green reflections; legs, vermilion red; female, brown. This splendid bird is a native of Sumatra.

With respect to the last three species, we believe that our naturalists regard them as having contributed to the domestic fowl; indeed, with respect to the fire-backed pheasant, this species represents a form distinct from that of the true jungle-fowls, and must, therefore, be considered out of the question.

It is then, to the three preceding species that we must look. That the Kulm fowl of the Dukhun, and the gigantic Malay fowl, are identical we believe is generally admitted, and the breed appears to be more extensively spread in a domestic state than is supposed. In the proceedings of the Zoological Society, for 1835, p. 92, we have the following notice relative to some Herat fowls presented to the society by Keith E. Abbott, Esq.—These were a cock and two hens of the fowls of Herat, in Khorassaun, a breed which Mr. Abbott believes is unknown in Europe. They are young birds, of the real Herat race. These, it was stated,

(at the meeting) were apparently identical with the Kulm fowl of Dukhun, and the Malay fowl, the *Gallus giganteus*—Temm.

Here then we have a domestic race, traceable to an aboriginal stock; and though it is not of general distribution, still, in all probability, it has at some time or other crossed with a breed from one of the smaller jungle-fowls, and thereby contributed to the increase of stature. That the Bankiva jungle-fowl of Java, or its larger continental variety, if it be not a distinct species, (and of which sir W. Jardine states that he has seen several specimens,) is one of the sources of our domestic breeds, cannot, we think, be for a moment doubted. It would be difficult to discover any difference between a clean-limbed black-breasted red bantam-cock, and a cock Bankiva jungle-fowl. Indeed, the very term bantam goes far to prove their specific identity: Bantam is a town or city at the bottom of a bay on the northern coast of Java; it was first visited by the Portuguese, in 1511, at which time a great trade was carried on by the town with Arabia, Hindostan, and China; chiefly in pepper. Subsequently it fell into the hands of the Dutch, and was at one time the great rendezvous for

European shipping. It is now a place of comparative insignificance.

From this it would seem that the jungle-fowls domesticated and sold to the Europeans at Bantam, continued to be designated by the name of the place where they were obtained, and in process of time the name was appropriated to all our dwarfish breeds.

Among the birds forming the collection in the Chinese museum, exhibited for some years at Hyde Park Corner, are specimens of the Bankiva jungle-fowl; of the species indigenous in China, in a wild state, its range is more extensive than naturalists are aware of; it is, however, not improbable, that the specimens were imported into Canton from Java, and there sold with other specimens, some indigenous, others from Malacca, to the proprietor of the museum. We are the more confirmed in this opinion, because we find the argus pheasant, a native of Malacca, Sumatra, etc. in the same collection.

With respect to Sonnerat's jungle-fowl, the ordinary jungle-fowl of continental India, though the traveller whose name it bears regarded it as the stock whence our domestic races sprung, we cannot say that such is our

opinion. The laminated structure of the hackle feathers, and those of the shoulders, is never seen in any of our domestic breeds; moreover, the female has the throat clothed with feathers, and only a space round the eye bare. Nevertheless, we will not deny that, in some of the domestic varieties there may have been a cross with this species at some period or other, of which the distinctive marks have gradually become obsolete.

This, then, is the sum and substance of our knowledge respecting the wild origin of the domestic fowl, of which various breeds are spread over the world. Still more are we in the dark as to the time and circumstances of its subjugation and dispersion. We have already advanced an opinion, from a casual and little-noticed expression in the first Book of Kings, that as early as the days of Solomon, the domestic fowl was kept in Judæa, and that it was perhaps in a state of tameness long antecedently among the Egyptians. At a late period in Judæa, the fowl, as numerous allusions prove, was common. The Saviour's words to Peter, and the lamentation over Jerusalem, so full of beauty and pathos, "How often would I have gathered thy chil-

dren together, as a hen gathereth her chickens under her wings, and ye would not!" are passages sufficiently corroborative. A few years, however, antecedently to the point of time to which these passages lead us, we find that, even in Britain, the domestic fowl was known. How it had reached this *ultima thule*, of which the Romans, previous to the invasion, or we might almost say, discovery by Julius Cæsar, were ignorant, it is difficult to determine. We cannot think that it was imported by the early tribes, Celtic or Belgic, who colonized our fertile land; they were nomadic people — warriors, scarcely knowing whither they went; if, however, we might hazard an opinion, it is to the Phœnicians — the merchants of Tyre, whose vessels brought the peacock to Solomon, and who were the great mariners of antiquity, that we owe the introduction of this valuable bird. A history of that wonderful people remains yet to be elaborated; but that they were familiar with our western and southern coasts, and also with "Erin's green isle," is, we believe, conceded by all antiquarians. Another inlet to the fowl might have been by the way of Gallia, (where, as Cæsar informs us, three settled nations

dwelt, dividing the land, in his days,) and between which country and Britain, there was a perpetual intercourse. Be this as it may, Cæsar notices the fowl as established in our island, and informs that, though it was kept for pleasure, it was forbidden by the Druids to be used as food. The goose,* the hare, and the fish of rivers were also among the forbidden meats. That the Romans, during their long domination, introduced various breeds of fowls, and perhaps other poultry into our island, may be easily believed; nevertheless, the fowl and the goose were domesticated here, on their arrival. The gems and coins of ancient Greece prove the remoteness of time at which the domestic fowl was a familiar denizen in that country. The cock was dedicated to several of the Grecian gods, as Apollo, Mars, Mercury, Æsculapius, etc., and our readers may remember that, in his dying hour, the great Socrates—perhaps in irony, perhaps from some feelings connected with early associations—reminded his friends that he owed a cock to Æsculapius. The watchfulness, spirit, and prowess of the bird

* We have here a proof that the goose was kept domesticated in England from a very early epoch.

were no doubt its recommendations. The Greek names of the fowl are Alectryon, (ἀλεκτρυών,) and Alectoris, (ἀλεκτορίς,) but it was also called the Persian bird, (Περσικὸς ὄρνις,) and Aristophanes (Birds) introduces one of his characters as showing how the cock had reigned in Persia before Darius and Megabyzus, a circumstance which goes some way to prove the westward radiation of the fowl from its Indian cradle. Various breeds for the combat were highly esteemed in Greece. Those of Tanagra Delos, and Rhodes, also of Chalcis, Media, Persia, and the neighbourhood of Alexandria, were in high repute. The Romans, who imitated the Greeks in so many points, adopted, among others, the savage amusement of cock-fighting, so consonant to the taste of a populace whose greatest delight was in the combats of a blood-stained arena, where men and beasts fell in mortal strife to gratify the lust of slaughter. But the delicacy of the flesh of these birds was by no means overlooked by the Romans in the days of their luxury, when exorbitant sums were lavished upon the pleasures of the table, and the nobles vied with each other in the senseless extravagance of their entertainments. In order to

improve the whiteness and delicacy of their flesh, fowls and capons were fed in the dark upon meal, for the gratification of the palate of the epicure. A "barn-door chuckie," we think, would have been ten times more preferable; however, on the score of fattening and cramming, and torturing poultry, neither we of England, nor our neighbours of France, have a syllable to utter against the ancient Romans.

If in ancient Greece and Rome cock-fighting were a favourite amusement, not less so has it been in England. The practice was not improbably introduced into our island by the Romans, when they established here their language and their customs. Be this as it may, it is only within this last few years that this barbarous sport has become neglected, and that the cockpits have been deserted. Not that the cruel practice is quite obsolete, for there are a few still who delight in the mortal combat of the feathered champions, and keep up the game breeds in their purity. In India, China, Malacca, and the Greek islands, this sport is carried on with the utmost ardour. In Sumatra, indeed, it is pursued with an excitement bordering upon

mania; and we are credibly informed, "that instances have occurred of a father staking his children or wife, and a son his mother and sisters, on the issue of a battle."

Of the utility of the fowl as an article of food, and of the goodness of its eggs, little need here be said;—all are aware of the vast numbers of the former consumed in the metropolis alone; and with respect to the latter, thousands are annually imported from France to meet the demands of the market. In all ages, the cock has been celebrated as the harbinger of morn, the herald of the sun, whose clarion sounds before the break of day. "Watch ye, therefore," says our Saviour, "for ye know not when the master of the house cometh; at even, or at midnight, or at the cock-crowing, or in the morning."

Though the common fowl is now widely spread, it is not adapted for the high boreal regions. It is not found to breed in the northern parts of Siberia, and in Iceland is kept only as a rarity. The manners of the ordinary fowl are too well known to require comment,—their mode of scratching the earth in quest of insects, their fondness for dusting their plumage, the proud strut of the cock at the

head of his train, his jealousy of a rival, his attention, and the peculiar note with which he calls the hens to partake of some choice morsel which he has discovered or scratched up, have been noticed again and again by all familiar with that interesting spot, a well-arranged farm-yard. After laying her egg, on leaving the nest, the hen utters a loud cackling cry, to which the cock often responds in a high-toned kind of scream. The number of eggs laid by a single hen during the spring and summer months, varies according to circumstances—as diet, a suitable locality, etc., but she can only cover in sitting from twelve to sixteen. The chick breaks the egg on the twenty-first day; in a few hours it is lively and active.

It is not only under the natural parent, whose patience, care, and anxiety are proverbial, that the eggs of the fowl are capable of being hatched. Artificial means have been and are successfully used, both in France and in England; and, as is well known, an establishment for hatching eggs has been long maintained in Egypt, from which thousands of fowls are annually distributed. The uniformity of the atmospheric temperature in

Egypt no doubt contributes much to success; but in our variable climate, the Eccaleobion * machine, invented by Mr. Bucknell, has been found to answer most admirably. This machine resembles an oblong box nine feet in length, three in breath, and three in height; it is placed on a table, and is warmed by means of an internal apparatus capable of being so regulated, that any degree of temperature may be maintained, from that of the atmosphere to that of 300 degrees of Fahrenheit. It is capable of containing two thousand eggs. Many thousand chickens have been matured in the egg by this machine; and could it be brought into general use, considerable advantage might result from its employment. Mr. Bucknell, in his "Treatise on Artificial Incubation," makes the following observations:—"It must have struck even the most superficial observer, that the extraordinary fecundity of gallinaceous fowls is a wise and most benevolent dispensation of nature, to provide more abundantly food for man; as in those tribes of birds not suited to his table, the female lays no more eggs than she can incubate.†

* Εκκαλεω, (eccaleo) to call forth —Βιος, (bios) life.

† This is not quite correct: the pigeon, the partridge, the

With respect, therefore, to domestic poultry, the (perhaps) most nutritious of all human food, this rich provision of bounteous Providence is for the first time available to Europe." That is, by means of the Eccaleobion. "We call the Egyptians barbarous: the procuring, however, by art and industry, of that necessary of life, good animal food, is no evidence of barbarism. If the population of the united kingdom, which, as respects Egypt, is as twenty-four to two, were as well supplied with this artificial production as Egypt, it would require, not ninety-two millions, but one thousand one hundred and four millions of poultry annually, for them to be as well-fed in this respect as the uncivilized natives of Egypt. But how stands the account on this matter? Full one-third of our population subsist almost entirely, or rather starve, upon potatoes alone; another third have, in addition to this edible, oaten or inferior wheaten bread, with one or two meals of fat pork or the refuse of the shambles, per week; while a considerable

quail, the pheasant, the grouse, etc, lay no more eggs than they can incubate, nor does the fowl in a state of nature; yet these birds are delicacies of the table. That the fowl should be so constituted as to lay, while in a state of domestication, more eggs than she can incubate, is a wise provision.

majority of the remaining third seldom are able to procure an ample daily supply of good butchers' meat, or obtain the luxury of poultry from year to year. On the continent of Europe, the population is still in a worse condition;—fish, soups made from herbs, a stuff called bread, made from every variety of grain, black and brown, hard and sour, such as no Englishman could eat,—olives, chestnuts, the pulpy saccharine fruits; roots, stalks, and leaves, and not unfrequently the bark of trees;—sawdust, blubber, train-oil, with frogs and snails, make up and constitute a good part of the food of the greater portion of the inhabitants of Europe. There is no other cause for this than the excessive ignorance of its population."

We think that Mr. Bucknell draws his picture a little too strong; and we cannot help suspecting that his Eccaleobion would not prove a panacea for the catalogue of evils he enumerates, though one were kept for the wholesale hatching of fowls in every village. In France, M. Réaumur pursued a long and varied series of experiments on the artificial means of hatching the eggs of poultry, the details of which he narrates at full, but which would here

occupy too much space to transcribe: suffice it to say, that he found a room situated over, and receiving heat from, the bread-ovens of a benevolent institution in Paris, the temperature of which was uniform, and easily regulated, to answer admirably; and there is no doubt but that hatching-chambers might be easily constructed on a similar principle. The necessary temperature, to be maintained as equally as possible, is about 96° of Fahrenheit. It is by a nice management of the temperature, and by that skill which arises from long practice, that the Egyptians, who profess the business, are so successful. There are people residing at the village of Berme and a few adjoining places in the Delta; and generation after generation they follow the same business: they make a mystery of it, and no one but these people are allowed to practise it. There are in the different districts of Egypt, about three hundred and eighty-six egg-ovens, or mamals, each managed by a Bermean, who is regularly licensed by the aga of Berme, and pays ten crowns for his certificate. Consequently, the number of ovens and practitioners cannot be increased without the approbation and licence of the aga. In

each of these ovens, six or eight broods are annually hatched, and each brood consists of from forty thousand to eighty thousand chickens. The Bermean guarantees two-thirds of the eggs with which he is entrusted by the proprietor, who speculates in fowls; and if any overplus eggs are hatched, the chickens are the perquisite of the Bermean, who, besides, receives his board, and thirty or forty crowns for about six months' service.

The Egyptian egg-ovens are made of brick, and may be described as follows:—Let us suppose a passage or gallery, about three feet wide, and nine feet high, with a round hole for an entrance instead of a door, running through the centre of a low building; on each side of this gallery are the chambers, arranged in two rows, a lower and an upper one, all of the same size, namely, four or five feet in breadth, twelve or fifteen in length, and three in height; each of these chambers is entered from the central gallery by means of a circular hole, just capable of admitting a man to creep through; consequently there are two rows of holes along the gallery. Each pair of rooms, namely, the under and upper, communicate by means of a similar hole in the centre of the

ceiling of the under room, which of course forms the floor of the upper room. The use of these two rooms is different. In the lower room the eggs, to the number of four or five thousand, are placed upon a bed of flax, or a large mat, and in the upper room is placed the fire, the heat of which communicates through the hole to the lower room, the temperature of which it duly raises. The fireplace is a sort of gutter, about two inches deep and six inches wide, running round two or three sides of the floor. The material used for burning consists of the dried dung of camels or oxen mixed with straw, and formed into compact cakes. These burn slowly, and the heat produced is easily controlled. The smoke escapes through the round entrance hole into the gallery, and thence through openings in the arched top of the gallery itself. The fire is not always kept burning, but only for an hour night and morning, and if the temperature require, perhaps for an hour in the day besides. When the smoke from the fires of the several upper rooms has passed away, all the round openings into the gallery are stuffed up with bundles of coarse tow, which effectually confines the heat, far more so than

a wooden door would. According to the weather, this routine is kept up for eight, ten, or twelve days; the fires are then altogether discontinued, the heat retained in the ovens being sufficient to maintain the necessary temperature. As the time of hatching draws nigh, a number of the eggs are now removed from the lower tier of rooms, and put into the upper rooms, and all are more spread out, to allow the unimpeded exit of the chickens from the shell, which takes place on the twenty-first day; and which, if the eggs were all huddled together, would be attended with some difficulty. Thus, without a thermometer to appeal to, and trusting to his own sensations as a guide in the regulation of temperature, and to tact, the result of experience, for management, does the Bermean successfully exercise his art, which has descended in Egypt from times of antiquity, surviving every change. That such a plan would succeed in our humid, changeable climate is, indeed, very problematical, nor is it ever likely to be attempted.

All birds require, while young, the mother's care; and though the true gallinaceous birds feed themselves in the course of a few hours after exclusion from the egg, still they need

from time to time her fostering warmth, and huddle together under the shelter of her wings. Réaumur, while pursuing his experiments on the artificial hatching of eggs, found it necessary to have recourse to some means of supplying the deficiency in this respect, and thereby atone for the want of maternal care. While crouching under the hen, the backs of the chickens are necessarily more warmed than the under parts; and he found, by experience, that in his contrivances, this principle must be always kept in view, and after several trials adopted a sort of box lined with sheep-skin, dressed with the wool on it. The top of this box sloped like a writing desk, and it was attached to, or rather inclosed within, a sort of large cage made of willow-grating, or net work, in which the chickens fed and played. At both ends, the box was open, allowing the chickens to enter, and its sloping top rendered it commodious for chickens of different sizes. In this simple apparatus, which Réaumur designated an artificial mother, the chickens slept at night; and they often resorted to it during the day, and as the smallest could easily escape at the lowest end, they were in no danger of being squeezed or crushed by

their larger companions. On this apparatus Réaumur afterwards made several improvements, with a view to convenience, and the safety of the young brood. Another apparatus consisted of a stove inclosed with netting for safety, surrounded by a sort of covered run, into which the brood could enter for warmth. The warmth of the stove served also to hatch fresh broods, the eggs being ranged over it.*

To the apparatus intended for young ducks or geese an additional compartment of turf sloping to a small pond was requisite.

In our island† many different breeds of fowls are distinguished, prized by amateurs, and several counties have been long celebrated for the size and excellency of their poultry; as for example, Sussex and Surrey. The Sussex fowls are of large size and fine flavour, but inclined to be long in the body. The breed around Dorking, in Surrey, is of great antiquity, and supposed by some to have been introduced by the Romans. A pure Dorking

* Some breeders of fowls in England use artificial mothers for their brood hatched in the natural way, and they may be resorted to very advantageously when any accident has happened to the hen.

† France has, in the peninsula of Caux, a peculiar and valued breed of fowls, which are fattened in the environs of Barbézieux La Flèche, and especially Mans, for the table.

fowl is of large size, and rounded contour; and furnished with one or more additional but imperfect toes; the legs are short, and the plumage white. The breed has been of late years much crossed with the ordinary dunghill fowl, and with the Sussex race, without any deterioration. The flesh is remarkable for whiteness, and delicacy of flavour. Vast numbers of these fowls are regularly sent to the London markets.

A breed of fowls often seen around London is termed the Spanish. These fowls are of a very large size, and the hens lay enormous eggs, but do not sit well. The plumage is black, the comb large, and often pendulous, and the naked skin behind the ears white. There is also a black Poland or Hamburg breed, with a large top-knot of long white feathers. Two breeds remarkable for beauty of plumage, are the gold-spangled and silver-spangled Polands. These have small combs on the forehead, and a full top-knot of feathers on the crown. Fine fowls of these breeds are highly valued.

From Persia, it would appear, is derived the rumpless or Persian breed, in which not only are the tail-feathers wanting, but the tail

itself. Fowls of this breed lay well, but are not pleasing in appearance. Another breed, known as the Friesland, is remarkable, from having all the feathers frizzled or curled up the wrong way. The appearance of these fowls is very unsightly. This breed occurs not only in Europe, but in the Deccan, and in Java and Sumatra. From Japan and China has been obtained the silk-fowl, so called from its plumage, which is white, being all discomposed and loose, and of a silky appearance. The comb and wattles are purple, and the periosteum, or membrane covering the bones, is black.

There is also another breed from India, of which we have seen several examples in which the plumage is as usual, but the comb, wattles, and skin, are of a dull purple-blue, and the periosteum black. This variety is the *Gallus Morio* of Temminck, and has been supposed, but on no good grounds, to be a distinct species. The flesh of this fowl, notwithstanding the colour of the skin and bones, is white and delicate.

No breed is so handsome as the true game race. The plumage is brilliant, the figure admirable, and the gait stately. The flesh is

delicately white, and of the finest flavour. The pugnacity of these fowls is very great, rendering it troublesome to rear them, and we have more than once known a whole brood of young game chickens more or less injured, and some killed on the spot, from fighting among themselves.

Of the bantam breeds, one is game, and resembles the game fowl, excepting in size; another breed is feathered to the very toes, the feathers on the tarsi, or beam of the leg, being long and stiff, and often brushing the ground.

A bantam breed with clean legs, and of most elegantly spangled plumage, has been brought to perfection by sir John Sebright. The attitude of the cock is singularly bold and proud, the head being often thrown so much back as to meet the tail-feathers, which are simple, like those of a hen, the ordinary sickle-like feathers being abbreviated and broad. This elegant little breed is in great request.

Such are the principal varieties of the common fowls to be observed in our island. They owe their origin to the breeder's skill, and, to be kept up in perfection, requires care, and judgment.

Fowls are easily kept; even in some of the streets of London we see them, but they are miserable and dirty, and roost at night, for the most part, in cellars, into which they descend on the approach of evening, accustomed, by use, to seek an underground asylum. We have often pitied the poor birds, whose dirty ragged plumage, dull eyes, and colourless combs, bespeak the want of air, and of proper food, and the evils of damp, and of muddy puddles. How different from the tenants of the farm-yard, with fields and green lanes around,—with pure air to breathe, plenty of good food, and clear water to drink! Where a farm-yard does not offer its advantages, a poultry-yard is a good substitute. This should be commodious and dry, and so sloping that no water lodges after rain, forming unwholesome puddles. It should have a warm aspect, and be sheltered from the cold winds. Ashes or sand should be stored in one corner for the fowls to roll in and clear their feathers from annoying vermin. If possible, they should have access to a fresh running streamlet, but pure clear water is indispensable. A dry common or fields, in which they may freely wander and pick up grubs, insects, ants' eggs, and the

leaves of plants, of which they are very fond, is a great advantage. From these excursions, so productive of health, they may be accustomed to return at a call. Poultry require a liberal supply of grain, and the best and heaviest corn is cheaper in the end than that of inferior quality: on this depend their size, the goodness and sapidity of their flesh, and the richness of the eggs. In Surrey, barley is the usual grain given, excepting during the time of incubation, when the sitting hens have oats, as being less heating to the system than the former.

With respect to the fowl-house, it should be dry and airy, but at the same time warm and well secured from weasels or rats, or from the incursions of the cat or fox. The perches should be conveniently arranged, quite horizontal, and of a thickness sufficient for the birds to clasp firmly. For laying-chambers, wooden boxes, with an entrance sufficient to admit the hen easily, and a ledge before it, are very convenient; these should be ranged round the wall, at about three feet from the ground. Some use wicker baskets fastened to the wall at a convenient height. Wheaten, or rye, or oaten straw should form the nest, never hay, which is too hot, and favourable besides

for the increase of vermin. The boxes or baskets in which the hens incubate should be as secluded as possible, and free from intrusion. The number of eggs may vary from twelve to sixteen, but should never exceed the latter; they should not be stirred, except by the hen, and more especially when incubation has proceeded for some time, lest the position of the chick be interfered with, for if taken up a little time before the exit of the chick, and incautiously replaced with the large end lowermost, the chick from its position will not be able to chip the shell, and must, therefore, perish. The forepart of the chick, be it observed, is towards the biggest end of the eggs, and it is so placed in the shell that the beak is always uppermost. Yet doubled up as the chick is in its close prison, it is enabled by its efforts to break the shell at the appointed time, and to this end its yet soft beak is furnished just above the point of the upper mandible with a small, hard, horny scale,* which, from the position of the head, as Mr. Yarrell observes, is brought in contact with the inner surface of the shell. The position of

* This little horny scale in the course of a short time peels off, but may be always seen on the beaks of newly-hatched chickens.

the bill peeping from under the wing remaining unaltered, the shell (greatly thinned and weakened by absorption during incubation,) is at length broken in one spot; this done, the impatient chick turns gradually, almost or entirely completing a revolution, the bill continuing to extend the fracture, which takes place circularly round the large end, about two thirds distant from the extremity of the small end. Sometimes before the fracture is fully complete the chick is enabled to make its exit, completing the fracture by its endeavours to push through. The length of time required for this process varies from an hour to six, and sometimes to twenty-four. In some instances, when the chick is weak and is unable to complete the fracture of the shell, or when the body sticking to the shell prevents it from accomplishing its circular revolution, the chick must be cautiously extricated. After gradually chipping the shell, the portions glued by the hardened white or albumen to the chick, if such there be, must be removed by means of a pair of delicate scissors.

"When the chick," says Réaumur, "is entirely or almost out of the shell, it draws its head from under its wing, where it had hitherto

been placed, stretches out its neck, directing it forwards, but for several minutes is unable to raise it. On seeing for the first time a chick in this condition we are led to infer that its strength is exhausted, and that it is ready to expire; but in most cases it recruits rapidly, its organs acquire strength, and in a very short time it appears quite another creature. After having dragged itself on its legs a little while, it becomes capable of standing on them, and of lifting up its neck, and bending it in various directions, and at length of holding up its head. At this period the feathers are merely fine down, but as they are wet with the fluid of the egg the chick appears almost naked. From the multitude of their branchlets, these down feathers resemble minute shrubs; when, however, these branchlets are wet and sticking to each other, they take up but very little room; as they dry they become disentangled and separated. The branchlets, plumules, or beards of each feather are at first inclosed in a membranous tube, by which they are pressed and kept close together, but as soon as this dries it splits asunder, an effect assisted also by the elasticity of the plumules themselves, which causes them to recede and

spread themselves out. This being accomplished, each down feather extends over a considerable space, and when they all become dry and straight, the chick appears completely clothed in a warm vestment of soft down."

It is usual as the chicks in turn make their exit from the egg to remove them, and keep them warmly covered up, till all are excluded and the hen is ready to take them under her charge altogether. Within twenty-four hours they begin to pick, and should be supplied with crumbs of bread, soaked in milk, egg boiled hard and chopped small, grits, and other grain. It is desirable to keep the chickens for the first week or ten days with the hen under cover, in some convenient place, so that the former may not be exposed to wet or to sudden changes of temperature, to which in the spring more especially they will be liable, and when during a sunny morning they are allowed to run about, the hen should be secured under a wicker coop, lest she should wander abroad, followed by her brood, to their risk, from various causes. The clucking note by which the hen calls her brood around her, and her fearlessness and self-devotion in their defence, are universally

known. Chickens hatched in the spring or summer begin to lay eggs early in the following spring; if, however, pullets hatched early in March be plentifully fed, they will sometimes lay eggs in the autumn of the same year.

Of the excellency of the flesh of the fowl nothing need be said; it is not always, however, that a young well-fed barn-door fowl is to be obtained, for the usual plan of the poulterer is to fatten the birds for the market; this practice if carried to a moderate extent is not objectionable, but they are often fed largely upon grease, and even crammed, by which means they become loaded with rank and disagreeable fat, to the deterioration of the flavour of the flesh.*

In France, the practice of cramming fowls is very common. The poor victims are mercilessly treated, they are kept in a dark place, or even deprived of sight, and closely imprisoned in one attitude, their heads, wings, and under parts are plucked, and at stated times food, by means of a sort of force-pump, is crammed down their throats, an assistant

* A well-fatted capon will often weigh seven or eight pounds, and sometimes nine or even ten. In France, capons are taught not only to hatch eggs, but to rear and watch over the chickens, and it is said they make excellent nurses.

holding the beak open, while the operator introduces the tube into the throat. Nor is this the only barbarity to which fowls on the Continent are subjected, sometimes even in England. But we shall not enter into details of cruelty.

Fowls are subject to various diseases, most of them arising from damp, cold, and improper food. Severe catarrhal affections, swelled heads, dropsy of the limbs, rheumatism, or the pip, or thrush, are among the number. The latter is to be cured by washing the tongue and mouth with borax dissolved in tincture of myrrh and water.

There is one disease called the gapes, to which domestic poultry, and also pheasants and partridges, are subject, and which often causes great mortality. Perhaps in the first instance it arises from a cold or a croupy or catarrhal affection, but in every case several parasitic worms of a singular form and structure will be found lodged in the windpipe, the removal of which (and it can be sometimes done by means of a feather introduced into the windpipe and turned round,) is requisite to save the sufferer. It may be that these worms are the sole cause of the disease. One mode

of destroying these worms is by putting the birds in a box, and making them inhale the fumes of tobacco, blown into the box through the stalk of a tobacco-pipe. A pinch of salt put as far back into the mouth as possible, is also said to be effectual. The worm in question is the *Syngamus trachealis*, or *Distoma lineare*. It consists of a long and a short body united together; the long body is the female, the short body the male; each, were it not that they are permanently united together, being a truly distinct individual. How these noxious parasites become introduced into the trachea of gallinaceous birds is a mystery. But such is the fact. The fowl will breed, as is well known, with the pheasant, but the hybrid progeny is destitute of beauty, and not worth attention.

Hens are frequently to be seen which have assumed the plumage and spurs of the cock, and which imitate, though badly, his full-toned crow. In these cases the power of producing eggs is invariably lost, from internal disease, as has been fully demonstrated by Mr. Yarrell. — See Proc. Zool. Soc. 1831, p. 22, and Phil. Trans. 1827.

There are instances on record of poultry

becoming white from sudden fear. In the Proc. Zool. Soc., 1835, p. 54, is the following note, extracted by sir Robert Heron, Bart., from his journal. "1821-2. A black Poland cock belonging to my friend and neighbour, Mr. Kendall, of Barnsley, was seized last winter, near the house, by a fox, but his screams being heard by the servants, he was rescued, desperately wounded, with the loss of half his feathers. In time the remainder of his feathers came off, and he is now become perfectly white. This seems to have some relation to the human hair becoming white at once from fear."

THE PEA-FOWL.

The pea-fowl (*Pavo cristatus*) is a native of India, Ceylon, etc., inhabiting the dense forests, where it perches on the highest trees often above the range of gun-shot; and the sportsman frequently hears its shrill, harsh, and startling cry, while the bird remains invisible, or launching itself into the air, floats in majestic buoyancy hopelessly high above his head. When on the ground, the pea-fowl keeps much amidst thick jungle, and if sud-

denly surprised, is out of sight in a moment. Besides man, many are the enemies of this beautiful bird, among which, the tiger, the leopard, and others of the feline race, are to be enumerated. In Ceylon, the natives assert that it often falls a prey to the slender loris, (*loris gracilis*) a small nocturnal animal of the Lemurine family, of arboreal habits. While the pea-fowl sleeps on its perch, its insidious foe creeps slowly and noiselessly towards it, and suddenly seizes it by the neck, which it clutches with such tenacity that the bird, fluttering in the agony of strangulation, drops from its perch to the ground, with its foe still clinging. Here it soon expires, and the loris devours its brains, leaving the rest of the body untouched. Colonel Sykes states that "the wild pea-fowl is abundant in the dense woods of the Ghauts: it is readily domesticated, and many Hindoo temples in the Dukhun have considerable flocks of them. On a comparison with the bird domesticated in Europe, the latter is found both male and female to be absolutely identical with the wild bird of India." In the passes of the Jungletery, colonel Williamson found these birds in great numbers, and the woods were strewed with

their beautiful plumes, and on one occasion he saw twelve or fifteen hundred together, feeding upon the bloom of mustard, cultivated in patches, and which attracted them. He states that when numbers are thus collected in the jungle it is not easy to get a shot at them, as they run extremely fast, and even a dog can scarcely make them take wing.

It is evident that the pea-fowl was domesticated at a very early period, for as we have previously observed, it was brought over for Solomon, and, doubtless, constituted one of the ornaments of his pleasure gardens. It was introduced into ancient Greece at a date far anterior to the time of Aristotle, who speaks of it as being familiarly known, and it is mentioned by Aristophanes.

The Romans were well acquainted with this gorgeous bird, the bird of Juno, as the poets called it, feigning that with the eyes of Argos she adorned its tail and thus bestudded it with gems—"*et gemmis caudam stellantibus implet.*"

The beauty of the peacock, however, did not insure its safety; numbers were killed to swell the luxurious entertainments of the wealthy, insomuch that one of the poets said,

Miraris quoties gemmantes explicat alas,
Et potes hunc sævo tradere, dure coquo."

You are filled with admiration as often as it unfolds its gemmed plumes;
And can you, hard-hearted, deliver this to the merciless cook?

The pea-fowl figured in the feasts of Hortensius and other sensualists; but how lavishly must it have been slaughtered for the emperor Vetellius, one of whose favourite dishes, called the buckler of Minerva, was prepared with the livers of scare,* the tongues of flamingoes, and the brains of peacocks. It is very probable that we owe the introduction of the pea-fowl into our island to the Romans. Its name in Saxon *pawa*, in Belgic *pauw*, in Teutonic *pfau*, and in French *paon*, are evidently mere corruptions of the Latin *pavo* (pronounced most likely *pawo*) itself a corruption of the Greek ταὼν (taōn). Like the

* A fish, *scarus creticus*. "The Archipelago (between Greece and Asia Minor) says Cuvier, possesses a species (of *scarus*) of a blue or red colour according to the season. It is the *scarus creticus* of Aldrovandus, and after fresh researches appears to me to be the true *scarus* so celebrated among the ancients, and which under the reign of Claudius, Elipertius Optatus, commander of a Roman fleet, went to procure in Greece, in order to naturalize it in seas of Italy. It is eaten at the present time in Greece, its intestines being seasoned."

Romans, our rude forefathers highly esteemed the peacock as a delicacy of the table; after being dressed, it was served up with the plumes attached and expanded, and thus swelled the pomp of the entertainment. Before the peacock and the ladies did the knight in the olden time utter his solemn vow.

The flesh of the young pea-fowl is still held in estimation, but that of old birds is tough and dry.

The habits of the pea-fowl in a state of domestication are well known; it is fond of wandering about, and is unfitted for the ordinary poultry yard; it delights to roam over extensive lawns, and about parks, and shrubberies, walking along with stately steps, its long plumes sweeping gracefully and constituting a train of inimitable splendour. Often it stops, and raising up its train expands its radiant colours to the sun, and looks proudly around, as if conscious of superlative beauty. Who has not gazed with admiration on the spectacle thus presented? who, contemplating the bird thus adorned by the great Creator, as if to delight the eyes of man, has not been ready to exclaim, surely no monarch

on his throne was ever so gorgeously arrayed, not even "Solomon in all his glory."

Many persons regard the long plumes of the peacock as its tail, and in common language it is said "to spread its tail." This, however, is incorrect; the true tail, which consists of short stiff feathers of a rusty colour, is underneath these plumes, and serves to support them: it may be seen when the plumes are expanded. The plumes are really the tail coverts, and arise from the lower part of the back, where the skin is furnished with a strong muscular expansion in order to raise them at pleasure. The structure of these plumes and the ever-varying colours of the loose barbs that fringe them, have been often admired: the shaft is slender, tapering, and elastic, and is fringed on each side with long loose silky barbs, of metallic irridescence, glittering now green, now golden, as the light falls at different angles upon them. The shaft is terminated by an ocellated disc, a centre of purple, deep and intense, is encircled by rich emerald green, around which runs a broad expanse of gleaming bronze, with a narrow margin of golden green, the whole being fringed with waving threads of

varying hues, purple, or green, or bronze. But who can copy these glittering tints, this ever-varying effulgence? Art shrinks from the attempt. The female or pea-hen is destitute of these exquisite plumes, and is far inferior in beauty to the male; like him, however, she has an aigrette on the top of the head composed of twenty-four feathers: these resemble in miniature the feathers of the train, but are less brilliant. The male is furnished with spurs, and will sometimes use them with severity. We knew a gentleman who, when young, had his lip cut open by a blow from an angry peacock.

Though these birds roost on the highest branches of tall trees, and are fond of perching on elevated sites, still the female incubates on the ground; the chosen spot being concealed amidst bushes and jungles. The nest consists merely of a few sticks and twigs put together with dried leaves. The eggs are from five or six to ten in number. The female sits assiduously, but the male, influenced by a strange antipathy, will break the eggs if he can discover them. It is, therefore, necessary in the case of the domesticated birds to prevent the possibility of any inter-

ference on the part of the male with the female during incubation.

Sir Robert Heron, Bart., in his notes, (Proc. Zool. Soc. 1835, p. 54,) says, "For a good many years I have attended to the habits of pea-fowl, and for the last eleven years have written down my observations. I find the individuals to differ as much in temper as human beings: some are willing to take care of the young ones of others, whilst some have pursued and killed them, and this whether they had a brood of their own or not. Some cocks have assisted in the care of young ones, whilst others have attacked them. An early hen frequently has a brood herself the next year. Age makes no difference in the number of the brood. I have had six from a hen a year old, and one from an old hen." Sir Robert Heron also adverts to the decided partiality shown by the pea-fowl towards some particular individual, and their neglect of others, as well as the court paid by the hens to the males.

The peacock is not completely matured and in full dress till the third year. The food of these birds consists of grain of various kinds; the leaves and buds of vegetables; insects and

their larvæ, slugs, worms, and even lizards and small snakes. The voice of the peacock is a loud dissonant scream, and a frequent reiteration of this wild cry is said to indicate with certainty a change of weather; but we cannot say that we have observed the fact ourselves.

As in the case of the fowl and the pheasant, instances are not unfrequent in which the female assumes the male plumage, and even acquires his spurs. The causes which operate in producing this change we have briefly noticed in the previous article.

Long domestication has produced less variety in the colour of the plumage of the pea-fowl, than in the ordinary domestic fowl. We have seen some white peacocks, and others more or less pied with white; there is also a japanned breed, of which sir R. Heron speaks as follows: "The japanned breed are, I believe, a variety originating in England. In lord Brownlow's numerous breed of common, white, and pied, the japanned suddenly in my memory appeared amongst them. The same thing happened in sir J. Trevelyan's flock of entirely the common sort; also in a breed of common and pied given by lady Chatham to Mr. Thoroton, and in both cases to the extinction of the previously

existing breed." Of this japanned breed, we have seen no specimens, nor are we sure as to the colour assumed.

In all countries, the peacock is valued for its beauty. "Peacocks," says a writer, "are great favourites in Persia, and are more common than in this country as an ornament in grounds and gardens. The king of Persia has a throne which is called the throne of the peacock, on account of two artificial birds, intended to represent peacocks, which are placed on square pillars on each side of the seat. These birds are studded with precious stones, and each of them holds a large ruby in his beak." In China, beautiful fire-screens, and other ornamental articles are made of peacock's feathers, tastefully arranged, and mounted on ivory handles.

Besides the common peacock, which is too well known to need a detailed description, there is a second species seldom brought alive to England, called the Javanese, or Japan peacock. (*Pavo Japonicus* — Aldr.; *Pavo muticus* — Linn.; *Pavo Javanicus*—Horsf.) This species is a native of Japan, the Birman Empire, Java, and Sumatra. Living specimens have existed in the gardens of the Zoological Society, and

were brought from the Birman territory. This species equals the former in size, and is almost equally, if not quite as beautiful. The first information we have respecting this species, is that given by Aldrovandus, (1599,) who, however, had never seen the bird, but only two drawings sent by the emperor of Japan to the pope. Subsequently nothing farther was heard about it, till Shaw described it in his Zoological Miscellany, from a figure taken from an Indian drawing sent to England by a friend. M. Temminck in the year 1813, in the second volume of his work on Gallinaceous Birds, gave a sketch of the head, with a description, taken by Le Vaillant from a living individual seen by him at the Cape of Good Hope, whither it had been sent from Macao. More recently the bird has been described by Dr. Horsefield, who found it in Java; while sir Stamford Raffles observed it in Sumatra. Specimens are in the British Museum.

The prevailing tints in this species are blue and green, varying in intensity and mutually changing into each other, according as the light falls more or less directly upon them. The crest is twice as long as in the common species, and the feathers of which it is com-

posed, are regularly barbed from the base upwards in the adult bird, and of equal breadth throughout. Head and crest interchangeably blue and green, a naked space on the cheeks, including the eyes and ears, is coloured of a light yellow behind, and of a bluish-green towards its fore part. The feathers of the neck and breast, which are broad, short, rounded, and imbricated like the scales of a fish, (very different to those in the other species,) are at the base of the same brilliant hue as the head, and have a broad, lighter, and somewhat metallic margin. Those of the back have still more of the metallic lustre. The wing-coverts are of the general hue, with a deeper tinge of blue; the primary quill feathers are light chestnut. The tail feathers and their coverts, namely the train, are of a splendid metallic brown, changing into green. The latter are terminated by ocellated spots similar to those of the common peacock. Iris deep hazel; in the common species it is of an intense red. The female has a plain dress, closely resembling that of the common pea-hen; but the crest is different. (See Gardens and Menagerie of Zoological Society.)

Whether this species is gregarious like the common pea-fowl, or more solitary in its habits,

we have yet to learn, nothing, indeed, is known respecting its manners in a state of nature, nor does it seem to be very abundant. Preserved specimens are in the British Museum, and in the museum of the Zoological Society.

THE TURKEY.

The turkey (*Meleagris Gallopavo*) is originally a native of America. The term *meleagris*, applied by modern zoologists to this bird, was given by the ancients to quite a different species, namely the guinea-fowl. According to Grecian fable, the sisters of Meleager mourning the death of their brother, were transformed into these birds, the plumage of which is covered with white spots, the showers of their tears. The application of the title meleagris to the turkey, arose from the obscurity in which it was enveloped when it first made its appearance in Europe, and the very names of Turkey, Coq d'Inde, Gallo d'India, and Indianische Hahn, prove the ignorance which prevailed respecting it. The history of the turkey, indeed, as it respects its introduction into Europe, is almost a blank. When, or by whom

it was brought, we do not know: most probably Spain first received it in the beginning of the sixteenth century from her new world colonies, and most likely it had been long antecedently domesticated in Mexico. Certain it is that Oviedo, in his Natural History of the Indies, (for so were the intertropical parts of America then called,) published at Toledo in the year 1526, describes the turkey as a kind of peacock, abounding in New Spain, whence numbers had been transported to the islands and the Spanish Main, and domesticated in the houses of the Christian inhabitants. Yet even in 1524, during the reign of Henry VIII., was the turkey known in England. There is an old distich which runs as follows:—

"Turkies, Carps, Hops, Pickerell, and Beer,
Came into England all in one year."

It was about the year 1524 that hops, or the *Humulus lupulus*, were introduced into England from Flanders, and at the same time came in the turkey. In other respects the couplet is erroneous. Mr. Yarrell, who, in his history of the carp, notices these lines, says, "Pike, or Pickerell, were the subjects of legal regulations in the reign of Edward I. Carp are mentioned in the Book of St. Albans,

printed in 1496. Turkeys and hops were unknown till 1524, previous to which wormwood and other bitter plants were used to preserve beer; and the parliament in 1528, petitioned against hops as a wicked weed. Beer was licensed for exportation by Henry VII. in 1492, and an excise on beer existed as early as 1284, and also in the reign of Edward I."

Difficult as it is to rear broods of turkeys in our country, they appear to have greatly multiplied soon after their introduction, for in 1541, we find them enumerated among the delicacies of the table. Archbishop Cranmer (Leland's 'Collectanea') ordered that of cranes, swans, and turkey-cocks, there should be at festivals only one dish; and in 1573, Tusser, in his Five Hundred Points of Good Husbandry, enumerates these birds as gracing the farmer's table at Christmas. In the present day the turkey, in a state of domestication, is very widely spread. In India it is reared, according to colonel Sykes, in great numbers by the Portuguese. It has not, we believe, extended to Persia. There is a humorous story told in the Sketches of Persia, that these birds are at least not generally known there. It appears that two English gentlemen, on their arrival

at the town of Kazeroon, on their way to Shiraz, heard a strange account of two remarkable creatures that were to be seen at a village fifteen miles distant. In answer to the questions which their curiosity prompted them to put, one old man said—They are very like birds, for they have feathers and two legs, and one of them has a long black beard on the breast. But the chief point on which they dwelt was the strangeness of their voice, so unlike that of any other bird they had ever heard. An old man who had gone all the way from Kazeroon to see them, said that the sound was very much like that of the Arabic language, but, nevertheless, he added, though he had listened to them with the greatest attention, he had not been able to understand a word they said. At great inconvenience, and with no little fatigue from the badness of the roads, the two Englishmen, excited by curiosity, gained the village: they were taken to the place where these strange creatures were kept, the door was unlocked, and, lo! out marched a turkey-cock and his mate. The former rejoicing in his freedom began to strut about, and gobble his Arabic, with great vociferation. When informed by the

gentlemen, whose laughter was irrepressible, that these birds were common in India and England, the people were greatly surprised. The birds, it appeared, had escaped from a vessel which had been wrecked in the gulf of Persia, and had gradually made their way up the country.

We will not attempt to describe the turkey, for no one is unacquainted with its characteristics. It is certainly one of the ornaments of the farm-yard; the adult male in particular is a noble bird, and shows to great advantage, when with haughty port and expanded tail he struts about, uttering his guttural "Arabic." The carunculated skin of the head and neck changes from pale flesh colour to purple, and from purple to crimson, and ever and anon a smart jar with the wings as he draws them on the ground produces a whirring sound distinctly audible.

The male turkey is distinguished by short blunt spurs, and a tuft of long coarse black hair pendant from the lower part of the neck. The carunculated skin of the head and neck is more developed in the male than in the female, whom he much exceeds in size. The general plumage has a metallic lustre. In temper the

male turkey is extremely irascible; his fury, like that of the bull, is excited by red or scarlet colours, which rouse him to make an attack, from which children are occasionally liable to injury. We have more than once seen desperate battles between the turkey-cock and game-cock, in which the latter was more oppressed by the weight of his adversary than by his gladiatorial skill, and received but little injury.

Turkeys are birds of rambling habits, and only fitted for the farm-yard and extensive premises; they delight to wander in the fields, in quest of insects, on which with green herbage, berries, mast, and various seeds, they greedily feed. In this manner the troop will ramble about all day, returning to roost in the evening, when they should have a good supply of grain, and again in the morning. When adult, the turkey is extremely hardy, and will roost with impunity all night on the branches of tall trees during the severity of winter, especially if the weather be dry. Still it is better for them to roost under cover, on high perches in well-ventilated lofty sheds, appropriated exclusively to them. Their size renders them annoying and troublesome in

the ordinary fowl-house, and besides, the common poultry have a strong dislike to associate with them.

The domestic turkey varies considerably in colouring: we have seen some of pure white, some of a delicate fawn colour, others of a coppery tint, and others of a bronzed black. The dark-coloured birds are considered the most hardy, and are usually of a larger size than the paler varieties, and are, therefore, generally the most prized. The female lays early in the spring: the number of eggs is indeterminable, but she will cover no more than twelve or fifteen: they are of a whitish colour spotted with brown. The period of incubation lasts for thirty days. During the time the hen is sitting, she requires constant attention: she should not only be secluded from the male, but taken occasionally off the nest to feed, and regularly supplied with fresh water, otherwise she will continue to sit without leaving for food, or refreshment, till completely exhausted. At the time of hatching, far more care and attention is required than in the case of the common hen, but in the degree of protection which she shows towards her brood, the turkey hen is far

inferior. She has neither the alertness, courage, nor tender solicitude of the fowl; she is but little apt in their defence, and has no idea of calling them around her and teaching them to pick and search for food. They require, therefore, unremitting attention, until they are fairly reared, and this is a work of no little trouble, for although the adult turkey is so hardy, a shower of rain will kill the chicks, and irregularity of feeding will thin their numbers rapidly. Linnæus remarks that the young relish garlic and nettles, and must be defended from rain and hunger. Curd, the green part of onions chopped, and boiled nettles, boiled eggs, barley meal or oatmeal kneaded with milk or water, chopped beet or turnip leaves, etc., constitute the diet on which the chicks best thrive. They should not be exposed to great heat or cold, and it is better to have the brood hatched rather late in the spring, when the weather becomes settled, than at an early period.

Turkeys are crammed in order to attain the requisite degree of plumpness for the London poulterer; and it is principally from Norfolk that the London markets are supplied. This process of fattening, in the case of turkey

poults, may commence when they are about six months old, and they require a longer time to become fit for the market than the fowl. The large birds which grace the shops at Christmas are usually males of the preceding year. These birds are often of extraordinary size and weight, ranging from fifteen to thirty pounds.

So far we have attended to the domestic turkey; but as the manners and habits of the wild bird are remarkable and very interesting, our history would be far from satisfactory were we to abstain from detailing them. Our authorities, it must be premised, are the Prince of Canino, (C. L. Bonaparte,) and M. Audubon, who have paid great attention to these birds in their native forests.

"The native country of the wild turkey," says C. L. Bonaparte, "extends from the north-western territory of the United States to the Isthmus of Panama, south of which it is not to be found; notwithstanding the statements of authors who have mistaken the curassow for it. In Canada, and the densely peopled parts of the United States, wild turkeys were very abundant; but like the Indian and buffalo, they have been compelled to yield to the destructive ingenuity of the white settlers, often

wantonly exercised, and seek refuge in the remotest parts of the interior. Although they relinquish their native soil with slow and reluctant steps, yet such is the rapidity with which settlements are extended and condensed over the surface of this country, that we may anticipate a day at no distant date, when the hunter will seek the wild turkey in vain." From Audubon we learn that the unsettled states of the Ohio, Kentucky, Illinois, and Indiana, an immense extent of country to the north-west of these districts, upon the Mississippi and Missouri, and the vast regions drained by these rivers, from their confluence to Louisiana, including the wooded parts of Arkansas, Tennessee, and Alabama, are the most plentifully supplied with this magnificent bird. It is less plentiful in Georgia and the Carolinas,—becomes still scarcer in Virginia and Pennsylvania, and is now very rarely seen to the eastward of the last-mentioned states.

"The wild turkeys do not confine themselves to any particular food; they eat maize, all sorts of berries, fruits, grasses, beetles, and even tadpoles; young frogs and lizards are occasionally found in their crops; but where the pecan nut is plentiful, they prefer that

fruit to any other nourishment; their more general predilection, however, is for the acorn, on which they rapidly fatten. When an unusually profuse crop of acorns is produced in a particular section of country, great numbers of turkeys are enticed from their ordinary haunts in the surrounding districts. About the beginning of October, while the mast still remains on the trees, they assemble in flocks, and direct their course to the rich bottom-lands. At this season they are observed in great numbers on the Ohio and Mississippi. The time of this irruption is known to the Indians by the name of the turkey-month.

"The males, usually termed gobblers, associate in parties numbering from ten to a hundred, and seek their food apart from the females, whilst the latter either move about singly with their young, then nearly two-thirds grown, or in company with other females, and their families, form troops sometimes consisting of seventy or eighty individuals, all of whom are intent on avoiding the old males, who, whenever opportunity offers, attack and destroy the young by repeated blows on the skull. All parties, however, travel in the same direction, and on foot,

unless they are compelled to seek their individual safety by flying from the hunter's dog, or their march is impeded by a large river.

"When about to cross a river they select the highest eminences that their flight may be the more certain, and here they sometimes remain for a day or more, as if for the purpose of consultation, or to be duly prepared for so hazardous a voyage. During this time the males gobble obstreperously and strut with extraordinary importance, as if they would animate their companions, and inspire them with the utmost degree of hardihood; the females and young also assume much of the pompous air of the males, the former spreading their tails and moving silently* around. At length the assembled multitude mount to the tops of the highest trees, whence at a single note, from a leader, the whole together wing their way towards the opposite shore. All the old and fat ones cross without difficulty, but the young, meagre, and weak, often fall short of the desired landing, and are forced to swim for their lives. This they do dexterously enough, spreading out their

* Audubon says the females purr loudly and perform extravagant leaps.

tails for a support, closing the wings to the body, stretching the neck forwards, and striking out quickly and forcibly with their legs. If in thus endeavouring to gain the land, they approach an elevated or inaccessible bank, their exertions are remitted, they resign themselves to the stream for a short time, in order to gain strength, and then with one violent effort escape from the water. But in this attempt all are not successful: some of the weaker, as they cannot rise sufficiently high in the air to clear the bank, fall again and again into the water, and thus miserably perish. Immediately the turkeys have succeeded in crossing a river, they for some time ramble about without any unanimity of purpose, and a great many are destroyed by the hunters, although they are then least valuable.

"When the turkeys have arrived in their land of abundance, they disperse in small flocks, composed of individuals of all sexes and ages intermingled, who devour all the mast as they advance. This occurs about the middle of November. It has been observed that, after these long journeys the turkeys become so familiar as to venture on the plantations, and even approach so near

farm-houses as to enter the stable and corn-cribs in search of food. In this way they pass the autumn and part of the winter. During this season great numbers are killed by the inhabitants, who preserve them in a frozen state, in order to transport them to a distant market." From the middle of February to March, the male turkeys seek to join the females, which a short time previously separate from and avoid them. At this season the males strut about, uttering their loud gobbling notes, and often engage in desperate combats, terminating in the death or flight of one of the parties. At night the males and females roost apart from each other, in the wood, but at no great distance, so that they are within the sound of each other's voices; and when the female utters a call note, it is responded to by numerous males, rolling out note after note, with great velocity, much in the manner of the domestic turkey-cock when suddenly alarmed.

Three or four hens, or even more, are usually attached to a single male; they wander about in company together, and roost in the same or adjacent trees. This association continues till the females begin to lay, which is usually

about the middle of April, when they forsake the male, and look out for suitable places in which to deposit their eggs. Several hens sometimes associate together and make a common nest, incubating together as if for mutual safety, and rearing and watching over their united broods in common. The chosen spot is always dry and well concealed; for the lynx, the fox, the polecat, and the crow are enemies to be guarded against; the nest consists of dried leaves deposited in a shallow depression under the cover of dense brushwood, amidst piled up logs or masses of fallen timber, or in other obscure and retired situations. The eggs, from nine to fifteen in number, are of a whitish colour, spotted with reddish brown.

On leaving her nest the female cautiously covers the eggs with dried leaves, lest they should catch the prying eye of some marauder, and both on leaving them, and in returning, she varies her route, rarely pursuing the same track twice together. On the approach of man, or any animal, the female crouches closer on her eggs, watching every movement with the greatest attention, and if no notice be taken of her will permit a very close approximation;

if, however, she perceive that she is discovered, she runs off for several yards, then pauses, struts about, and utters from time to time a cluck of anxiety or impatience. On the departure of the intruder, she cautiously returns. It is not often on account of interruption from man that she abandons the eggs; but if any have been sucked by the crow, polecat, or snake, she infallibly leaves them; this, however, seldom happens where several females incubate in concert, as one or more always guards the common nest, while the others are temporarily absent.

When the eggs are at the point of hatching, the female is doubly assiduous, and will die rather than leave them. She will even suffer an inclosure to be drawn around her, and while thus imprisoned will attend to her duties. Audubon says, "I once witnessed the hatching of a brood of turkeys, which I watched for the purpose of securing them together with the parent. I concealed myself on the ground within a very few feet, and saw her raise herself half the length of her legs, look anxiously upon the eggs, cluck with a sound peculiar to the mother on such occasions, carefully remove each half empty shell,

and with her bill caress and dry the young birds, that already stood tottering and attempting to make their way out of the nest. Yes, I have seen this, and have left the mother and young to better care than mine could have proved, to the care of their Creator and mine. I have seen them all emerge from the shell, and in a few moments after, tumble, roll, and push each other forward, with astonishing and inscrutable instinct."

When the young are dry and sufficiently strong, the female rises from her nest, shakes and arranges her plumage, and prepares to lead them abroad. She walks slowly along, with half expanded wings, and by repeated clucks keeps them together and around her. Her eyes are incessantly on the watch, she glances anxiously in every direction, scrutinizes the trees, the sky, the ground, and the thickets, lest her brood be suddenly assailed by the hawk or the fox. She avoids also low and wet grounds, resorting to elevated spots, for instinct has told her that the brood when once their soft down is wetted seldom survive. Hence it happens that in rainy seasons young turkeys are very scarce.

For the first few days, the female does not

lead her brood to a distance, and usually returns with them to the nest as the evening comes on, where they rest during the night, huddled up warm beneath her wings. As they gain strength, they make wider excursions, visit the glades and more open parts near the wood, and there pick up various fruits, berries, and insects, as grasshoppers, etc. and the larvæ of ants. They luxuriate in the sun, and roll themselves in sandy places, or in deserted ants' nests, and thus clean their growing plumage. In about a fortnight, the young begin to roost at night on the lower branches of a tree, but still under the care of the female parent who covers them with her wings, as they sit in two parties crouching on each side.

After this period the growth of the young turkeys is very rapid, and towards the middle of August, when several broods under the care of their respective mothers associate together, they are quite able to provide for their own safety and escape from enemies. Their wings are vigorous, and their limbs robust and active; they easily mount into the branches of the trees or run to shelter in some covers. Soon after this period the great

re-union of the females with their broods and of the adult males takes place, preparatory to the October migration from one district to another.

Besides man, who employs traps of various kinds, and the gun, in the capture of this bird, the turkey has numerous enemies, of which the lynx, the snowy owl, and the Virginian owl, are the most formidable. The lynx follows the flock, singles out stragglers, and lies in ambush till an opportunity of springing upon his victim occurs. The owls attack them while roosting at night, and hovering over the trees on silent wing, make a rapid and often fatal pounce on the unconscious sleeper. In this, however, the owl is not always successful, for if discovered by one wakeful turkey, a single cluck announces to the whole flock, the presence of their foe. In an instant, every bird stands upright on its perch, and intently watches the motions of the winged marauder, and prepares for the swoop. Having selected his prey, down comes the owl, with arrow-like rapidity and vast force, against which positive resistance would be vain, but just at the proper instant the wary turkey lowers its head, and stooping,

spreads its stiff tail in an inverted manner over its back, and along this, as a smooth inclined plane, the owl glances, without injury to the turkey, which immediately drops to the ground, with the loss of a few feathers, and conceals itself.

The wild turkey is very shy, and generally makes off on the appearance of a man, yet when at roost, though a single owl would alarm a whole troop, the hunter may thin their numbers with his gun during moonlight, neither the report, nor the sight of their companion dropping from the branches, exciting more than a buzzing noise, expressive rather of astonishment than of positive fright. "When, (says Audubon,) after a heavy fall of snow, the weather becomes frosty so as to form a hard crust on the surface, the turkeys remain on their roosts for three or four days, sometimes much longer, which proves their capability of continued abstinence. When near farms, however, they leave the roosts and go into the very stables, and about the stacks of corn, to procure food. During melting snowfalls, they will travel to an extraordinary distance, and are then followed in vain, it being impossible for hunters of any description to

keep up with them. They have then a dangling and straggling way of running, which, awkward as it may seem, enables them to outstrip any other animal. I have often, when on a good horse, been obliged to abandon the attempt to put them up, after following them for several hours. This habit of running in rainy or very damp weather of any kind is not peculiar to the wild turkey, but is common to all gallinaceous birds. In America, the different species of grouse exhibit the same tendency."

During the breeding season, the males may be allured within gun-shot by imitating the call note of the female. It is done by forcibly drawing the air through one of the wing bones of a turkey, but it requires great practice, for the quick ear of the male immediately detects the slightest error of intonation, and immediately retreats.

The size of the wild turkey and the quality of the flesh vary according to abundance or scarcity of food. In districts where food is plentiful, the wild turkey is said to be superior to the tame bird for the table, and is in the highest season late in the autumn. In Mexico, however, the wild turkey, according to Her-

nandez, is inferior to the domestic breed, its flesh being dry and hard; this, perhaps, is owing to the quality of the food.

The wild turkey is far superior in stature and beauty to the tame bird; the latter, even in America, its native country, is deteriorated by domestication; hence mixed breeds between the wild and tame are much valued, and procured when possible. "Eggs of the wild turkey have been frequently taken from their nests and hatched under the tame hen; the young preserve a portion of their uncivilized nature, and exhibit some knowledge of the difference between themselves and their foster mother, roosting apart from the tame ones, and in other respects showing the force of hereditary disposition. The domesticated young reared from the eggs of the wild turkey are often employed as decoy birds to those in a state of nature. Mr. William Bloom, of Clurfield, Pennsylvania, caught five or six wild turkeys when quite chickens, and succeeded in rearing them. Although sufficiently tame to feed with his tame turkeys, and generally associate with them, yet they always retained some of their original propensities, roosting by them-

selves, and higher than the tame birds, generally on the top of some tree or of the house. They were also more readily alarmed: on the approach of a dog, they would fly off and seek safety in the nearest woods. On an occasion of this kind, one of them flew across the Susquehanna, and the owner was apprehensive of losing it; in order to recover it, he sent a boy with a tame turkey, which was released at the place where the fugitive had alighted. This plan was successful, they soon joined company, and the tame bird induced his companion to return home. Mr. Bloom remarked that the wild turkey will thrive more and keep in better condition than the tame on the same quantity of food." C. L. Bonaparte.

The author last quoted states that some domesticated turkeys of a very superior metallic tint are sold in the Philadelphia and New York markets as wild ones: many of these require a practised eye to distinguish their true character, but they are always rather less brilliant, and have a broad whitish band at the top of the *tail-coverts*, and another at the top of the *tail itself*, which immediately betrays them: the real wild birds are destitute

of the whitish band on the tail-coverts, and the band at the top of the tail is neither so wide nor so purely white.

The female wild turkey is far inferior in size to the male; she is adult and in full colouring at four years' old, and then possesses the pectoral tuft of hair, of about four inches in length. Her weight is from nine to ten pounds, but the male varies from fifteen to twenty pounds in weight. Birds of thirty pounds are not rare; and instances have occurred, of their weight being thirty-six, and even forty pounds. In April and May, the males are thin, and out of condition; yet C. L. Bonaparte notices a specimen killed on the Missouri in April, which weighed twenty-two pounds, but which, when in good condition, must have exceeded thirty. The male wild turkey may be regarded as mature at the age of between three and four years, but, for several years afterwards, increases in weight and the metallic lustre of the plumage.

It is much to be regretted that the wholesale destruction to which this noble bird is subjected throughout the whole extent of its range, tends every year to diminish its numbers, insomuch that in a comparatively short

period of time, the wild turkey will rank in the list of animals which man has utterly extirpated.

Besides the wild turkey of North America, a distinct species, the Honduras turkey (*Meleagris ocellata)* is found in certain parts of central America, adjacent to Mexico. The first specimen, known formerly in Bullock's collection, now in the museum of Paris, was brought from the Bay of Honduras. A fine specimen is in the British Museum. This bird is considerably smaller than the common wild turkey, but is far more beautiful, the metallic hues and irridescence of its plumage equalling those of some of the humming birds,—black, golden, bronze, blue, emerald green, and rufous, are intermingled in exquisite contrast; and on the tail-feathers and upper tail-coverts, there are beautiful ocellated markings. The legs are lake-red.

Of the habits of this refulgent species, nothing is distinctly known. It appears to be very rare, unless, perhaps, in some localities, which are as yet unexplored.

THE GUINEA-FOWL.

The guinea-fowl, or pintado, (*Numida meleagris,*) is the true meleagris of the ancients,* a term generically applied by Belon, Aldrovandus, and Gesner, to the turkey, and now retained, although the error is acknowledged, in order to prevent confusion.

The common guinea-fowl is a native of Africa, where it appears to be extensively spread, frequenting the banks of rivers, and marshes, and open-humed localities, where various berries, seeds, insects, and slugs are in abundance. In its habits it is decidedly gregarious, and associates in large flocks, which wander abroad during the day in search of food, and collect together on the approach of evening, in order to roost upon some tall tree, or clump of trees, where they crowd in close array on the branches. It is not without difficulty that these birds can be forced to take to flight, and then it is only for a short distance. They trust principally to their rapid mode of running, and to their dexterity in threading the mazes of brushwood and dense herbage, for security. They scour the woodland glades

* See Ovid Metam. lib. viii. fab. 4.

and the open lands, bordering forests, or wild thickets, with great celerity, and quickly escape pursuit. In disposition they are shy, wary, and alert.

The guinea-fowl has been alluded to by various travellers in Africa, as Adamson, Dampier, Le Vaillant, and others; but as upwards of six distinct species are now known, (some of very great beauty,) and as they give no specific indications, we cannot positively say to which species they allude. However, it cannot be doubted that, in general manners and disposition, they all closely agree.

We have incontestable proof that the ancient Greeks and Romans were well acquainted with the guinea-fowl (or meleagris). It is noticed by Aristotle, among the former, and by Pliny, Varro, and Columella, among the latter. The wonder is that Belon, a scholar, should ever have considered the turkey as the bird in question.

But though, as we have said, this bird was known to the ancient Greeks and Romans, it does not appear to have spread rapidly, or been thoroughly naturalized, otherwise Belon's mistake would be unpardonable. In fact, we lose all trace of it in the middle ages, and strange to say, it appears to have come to us, not from

Africa, (and here we suspect the confusion arises,) but from the western world, where it had been introduced with human bondsmen torn from their native soil to supply the place of the miserably slaughtered population of the western world, and condemned to labour for the conquering white man, for him whose only passion, under the veil of popish religion, was "the accursed thirst for gold," "*auri sacra fames.*"

We learn that about the year 1508, numbers of these birds were brought into America with the cargoes of negro slaves:—"The Spaniards neither at that time nor ever since, have attempted to tame them, or render them domestic, useful birds, but let them go loose and wild in the savannahs, where they have increased in such prodigious numbers, that they may well appear native; and are seen in vast flocks together. They are called Maroon Pentates by the Spaniards and French," (Observ. sur les Cout. de l'Asie, p. 190.) At the present day, in Jamaica, but more especially Hayti, and other islands adjacent, the guinea-fowl, or pintado, is regarded as a wild bird and shot like other game. With respect to the British islands we are unable to say at what period it was introduced. We do not

find its name occurring in the list of birds in the famous feast of archbishop Neville in the reign of Edward IV.; it does not appear on the duke of Northumberland's household-book, 1512, nor is it alluded to in the household-book of Henry VIII., yet in these lists of flesh and fowl for the table, the peion, or peacock, is distinctly and conspicuously noted. It would appear, then, not to have been introduced until after the turkey;—(we must pardon Belon,)—probably not until the end of the seventeenth, or beginning of the eighteenth century. Even at present, in our country, it is far less generally kept than the turkey. In the colder latitudes of Europe, it is yet scarcely known. Linnæus does not mention it in his "Fauna Suecica," and we believe that neither Denmark, Norway, nor Northern Russia possesses it; at all events it is scarce. In India, the guinea-fowl is to be seen only in a domestic state, and is bred almost exclusively by European gentlemen. It thrives as well as in its native country. (See Proc. Zool. Soc., 1832, p. 152.)

Such is the meagre outline of facts which we have been able to collect respecting the European naturalization of the guinea-fowl.

The guinea-fowl retains in a state of domestication no small share of its original wildness, and restless wandering habits, and hence when closely confined it becomes dull and pining, and little disposed to breed; it loves a wide range of thickets, fields, and pasture grounds, and the run of open farm-yards, where it searches for insects, seeds, and green herbage, the flock traversing the hedge-rows and brakes, in the same manner as do turkeys. Like the turkey, too, the hen guinea-fowl conceals her nest from the male; for though at other times he is affectionate and solicitous, yet he evinces a great dislike to incubation, and on discovering the eggs never fails to destroy them. The hen, consequently, makes choice of the most secluded spot, so much so, that it is not without difficulty her retreat is discovered; and instances have come under our own notice in which a hen guinea-fowl has appeared in the farm-yard with a young brood attending upon her, after she had been given up as lost, or accidentally killed. In these instances, the eggs and young are subject to the attacks of foxes, polecats, weasels, and birds of prey; and as the guinea-fowl seldom shows much disposition to incubate if kept under restraint, it is a

common practice to place the eggs under a common fowl, the risk of the loss of the brood being thus avoided. The natural period of incubation is from twenty-eight to twenty-nine days. The female guinea-fowl commences laying in May, and continues to lay during the summer, and it is not until the latter part of the summer that, if left to her instinct, she begins to sit upon her eggs; these are smaller than those of the ordinary barn-door fowl, and are remarkable for the hardness of the shell, which is of a pale yellowish red, finely dotted with a darker tint. Their flavour is reckoned very superior.

The guinea-fowl may be said to succeed the pheasant in the London market, coming in after the season of the latter is over, and it must be acknowledged that the flesh of the young bird is very delicate, juicy, and well-flavoured—this remark, however, only applies to the young, for old birds, even those of the second year, are dry, tough, and tasteless, nor will the larding of the poulterer improve them.

The guinea-fowl is too well known to need a detailed description, nor is it subject to much variation of plumage. Individuals with the breast or under parts more or less extensively

white are common; and we have occasionally seen cream-coloured birds, in which, however, the white spots are clearly to be distinguished. Trees, where accessible, or tall thick bushes, are its favourite roosting-places, and on these the flock cluster, even during the winter, the cold of which they endure with great hardiness. We have noticed this indifference to cold in the pea-fowl, originally from India, and the same observation applies to the guinea-fowl of Africa, and we may also add the common fowl, of Indian origin; nor can we avoid seeing in these facts a wise provision, for the express purpose of facilitating the diffusion of species eminently useful to man.

The domestic guinea-fowl is by no means strong on the wing. Its note is a peculiar harsh querulous sound, often repeated, and certainly not agreeable; it reminds us of the noise of a cart-wheel turning on an ungreased axle-tree, or the creaking of rusty hinges. Besides the common guinea-fowl, (*Numida meleagris,*) several other wild species are known, some of which are remarkable for their beauty. All are African. In the genus *numida,* the males are destitute of spurs.

THE COLUMBINE, OR PIGEON GROUP.

Very numerous are the species comprehended under the term pigeon, (*Columba,*) and many are the genera into which they are resolvable. Their geographic distribution is most extensive. Some species seem very widely spread, as the rock-dove, found alike in Europe, Asia, and Africa, while others are restricted in the range of their natural territory. Europe, Asia, Africa, America, Australia, the Indian Archipelago, New Zealand, and various islands in the southern ocean, present us with various and beautiful species of the columbine group; of these, some are exclusively arboreal and fruit-eaters; as the aromatic pigeon of Java, the manosope of New Guinea, and the nutmeg pigeon of the Moluccas; others are partially terrestrial in their habits, as the ring-pigeon or cushat, and the stock-dove or wood-pigeon of Europe; and others are exclusively terrestrial, as the carunculated pigeon (*Geophilus caruncu-latus*) of South Africa, and some American and Australian species. A few, as the rock-pigeon, (*Columba livia,*) frequent abrupt and inaccessible precipices, along the shores of the sea,

and rear their young on the ledges, or in the rifts and fissures of the rock.

There has been much difference among naturalists respecting the natural affinities of the pigeon, or columbine group; some considering them as forming a part of the rasorial, or gallinaceous order, others regarding them as constituting a distinct order, an opinion entertained by Temminck, De Blainville, and the prince of Musignano, and which we think is correct. Though zoological niceties in a popular work like the present are out of place, still it may not be uninteresting to the general reader to follow out a succinct review of those peculiarities, which draw a line of demarcation between the pigeons and the gallinaceous, or other orders of the feathered race.

The gallinaceous birds are polygamous, and the females lay numerous eggs; the young are hatched in a very developed state, and soon run about and feed themselves. Pigeons, on the contrary, pair; and it would appear that in general a single male and female remain mated for life. Both work in concert in the construction of a rude inartificial nest, in which the female deposits two eggs, on which the male and female sit in turn. The young

are hatched blind, unfledged, naked, and helpless, and require the assiduous care of their parents, even for some time after they are able to leave the nest. Consequently they are fed by the parents, and herewith is connected one of the most singular points in the economy of these birds, which indicates their far remove from any of the gallinaceous order.

Most persons have had an opportunity of seeing pigeons feeding their young; the old birds place their beaks in the open mouth of the young, and by means of a voluntary action transfer nutriment from their own crop into that of their nestlings. Many naturalists have supposed the nutriment thus transferred to be nothing more than the macerated grain, or peas which have been previously swallowed; but this is not correct; for at first the young are not capable of digesting this coarse aliment. They are, in fact, fed by a secretion closely analogous to milk, and poured out from certain glands in the crop, both of the male and female, but at the time only when such a secretion is needed. This fact was correctly ascertained by the celebrated John Hunter. "During incubation (he says) the coats of the crop in the pigeon are gradually enlarged and

thickened, like what happens to the udder of females of the class mammalia, during the term of gestation. On comparing the state of the crop when the bird is not sitting with its appearance during incubation, the difference is remarkable. In the first case it is thin and membraneous, but by the time the young are about to be hatched, the whole, except what lies on the windpipe, becomes thickened and takes a glandular appearance, having its internal surface very irregular. It is likewise more vascular than in its former state, that it may convey a quantity of blood sufficient for the secretion of this substance, which is to nourish the young brood for some days after they are hatched. Whatever may be the consistence of this substance when just secreted, it most probably soon coagulates into a granulated white curd; for in such a form I have found it in the crop, and if an old pigeon is killed just as the young ones are hatching, the crop will be found as above described, and in its cavity pieces of curd mixed with some of the common food of the pigeon, such as barley, beans, etc. If we allow either of the parents to feed the young, its crop when examined, will be discovered to contain the same curdled

substance, which passes thence into the stomach (of the young), where it is to be digested." "The young pigeon is fed for some time with this substance only, and about the third day some of the common food is found mingled with it; as the pigeon grows older the proportion of common food is increased, so that by the time it is seven, eight, or nine days old, the secretion of curd ceases in the old ones, and, of course, no more will be found in the crop of the young."

"It is a curious fact, that the parent pigeon has at first the power to throw up this curd, without any mixture of common food, though afterwards both are thrown up according to the proportion required for the young ones. I have called this substance curd, not as being literally so, but as resembling that more than anything I know; it may, however, have a greater resemblance to curd than anything we are aware of; for neither this secretion, nor the curd from which the whey has been pressed, seem to contain any sugar, and do not run into the acetous fermentation." (On Anim. Econ.)

Montagu calls this a milky or lacteal secretion, and rightly regards it as "common to

both sexes of the dove genus," and from our own observations we should say that the curd is mixed up with a fluid secretion in the crop previously to being transferred into that of the young,—nay, sometimes so abundant is this fluid that we have seen it drip from the bills of the old birds, both while feeding their young, and at other times.

Though nothing like this lacteous secretion for the support of the newly-hatched young is produced by any of the truly gallinaceous tribes, yet we must not suppose that it is altogether limited to the pigeons. Some, if not all of the parrots, as John Hunter observes, appear to be endowed with the same faculty, and it will, perhaps, be found to prevail amongst the passerine tribes more extensively than is suspected by naturalists.

Besides this great point of distinction between the columbine and gallinaceous birds, and the other grounds of dissimilarity to which we have adverted, the following may also be enumerated. Instead while drinking, of taking water into the mouth and elevating the head, in order to swallow, as we see the fowl do, the pigeon simply takes a continuous draught. White says—"Most birds drink sipping at

intervals, but pigeons take a long-continued draught, like quadrupeds."

The hind toe, instead of being elevated on the leg, or tarsus, in the pigeon, is upon the same plane as the anterior toes; it is fairly pressed to the ground in walking, and embraces the roost in perching. Again, the wings are long, the quill feathers firm, and the flight remarkable for rapidity and endurance. To these rules there are certain exceptions, some of the more terrestrial species of pigeon being found to approximate in some degree, as it respects these particulars, to the gallinaceous tribes, while, at the same time, no one can mistake their true affinities. Two species of crowned pigeon* (*Lophyrus*) for example are known, both from the Moluccas, New Guinea, etc. Yet these large and heavy birds, almost exclusively terrestrial in their habits, and exceeding a fowl in size, are in essential structure true pigeons, though the wings and limbs approximate to those of gallinaceous birds.

We will not here enter into technical details, but we believe that, in a thorough examination of the internal organization, the

* Both species have been kept alive (1845) in the gardens of the Zool. Soc.

opinion which goes to associate the columbine tribes into an order distinct from any other, will be found to be completely justified.

De Blainville places the pigeons in an order which he calls *Sponsores.* The prince of Musignano terms them *Gyrantes,* (in allusion to their circular flight.) In the "Museum of Animated Nature" they are termed *Gyratores.*

THE DOMESTIC PIGEON. — The domestic pigeon is divided into almost innumerable varieties, from the high-bred carrier to the ordinary race of the dovecote; yet, diversified as they are in appearance, they are all, according to the opinion of those who have investigated the subject, descendants of the common rock dove,* (*Columba livia.*) To this opinion, were we not from experience aware of the difficulty of keeping up any remarkable strain in its purity, we should hesitate to subscribe; and we are not quite sure that there is not some ancient admixture of allied species, (as we believe to be in the instance of the dog,) whence, perhaps, arises a certain constitutional tendency to assume, at indefinite periods, varieties of form and con-

* Not the stock dove, (Col. Ænas,) which is a forest or woodland bird, and has obtained its title in error.

tour. We doubt much whether any plans of treatment or inter-breeding would ever produce a carrier or horseman, so singularly specific are they in their characters, and of this we are sure, that if the breed be once extinct, no arts will ever consummate its renewal. Other varieties are far more easily accounted for,—but this, of ancient lineage, descended from a remote line of oriental ancestry, has continued in distinctness to the present day. True, it has been interbred with baser strains by fanciers; but more or less pure, its distinctive characters yet survive, often in high perfection. We may say the same, with some reservation, respecting the barb,—a black pigeon with an occipital crest and a naked circle of scarlet skin round the eyes.

But before we attempt to give a sketch, (and a sketch only, for we are not of the fancy,) of the principal varieties of the domestic pigeon, it may be as well to turn our attention to their assumed origin, the rock pigeon, and give a brief history of its general habits and economy.

The Rock Pigeon (*Columba livia*).—*Le Biset* and *Le Rocheraye* of the French writers, *Piccione de Rocca*, etc., of the Italians, *Colom-*

men of the ancient British, is a bird of wide dispersion. It is a native of the British islands, breeding upon the sea-side rocks. It abounds in the Orkneys and Hebrides, along the rocky shores of Wales, and various other places on our coasts, not excepting old towers, and ruins a few miles inland, as we ourselves can personally testify. Throughout Europe, the same observations apply; along the coasts of France, Spain, and Italy, it frequents in multitudes the same localities. The rocky islands of the Mediterranean are its favourite abodes; it was known of old in Greece; it abounds in northern Africa, and along the Asiatic shores far into India. And here we cannot but advert to a passage in the Zool. Proc. 1832, respecting a pigeon noticed by colonel Sykes in his account of the birds of the Dukhun. The passage is as follows: "*Columba Ænas*, Linn. Stock-pigeon, *parwa* of the Mahrattas. The most common bird in the Dukhun, congregating in flocks of scores, and a constant inhabitant of every old dilapidated building. Colonel Sykes saw the same species on board ship on the voyage to England brought from China. Irides, orange, etc. The Dukhun bird differs from the European

species in the bill being black,* instead of pale red, in the utter want of white in the quills; the want of white in the tail-feathers; and in the legs being brown† instead of black. As these differences are permanent, they might justify a specific name being applied to the Dukhun pigeon."

Now we hesitate not to say that this bird was not the Stock-dove (*C. Ænas*) nor any variety of it, but the Rock-dove (*C. Livia*) or a closely allied species (if not mere variety), and this might be presumed from the fact alone of its inhabiting old dilapidated buildings. Selby speaking of the Rock-dove says, "Although this species seems to have fallen frequently under the notice of our ornithologists (as may be gathered from their descriptions and the localities they have given to it,) yet it has always been attended by the original supposition of this and the preceding species (stock-dove) being identical. In form and size they very nearly agree, the rock-dove being, perhaps, rather more slender. The predominant shades of each are also much

* Bill blackish brown. Selby, art. Rock-dove.

† Legs pale purplish red. Selby, art. Rock-dove. Bright cochineal red in the stock-dove.—Idem.

the same; the principal variations consisting in the colour of the rump, which, in the stock-dove, is invariably bluish grey, but in the rock-dove generally white, in the two distinct bands of bars (of black) crossing the wings of the latter bird, and in the colour of the breast and belly, which, in the former bird (stock-dove) is more of a purplish red. The dissimilarity of their habits, however, marks even more strongly the specific difference between them, than the proofs drawn from the plumage, the stock-dove being a constant inhabitant of the woods, and frequently the interior of the country;* but the species under consideration is in its wild state always met with inhabiting rocky places, and these principally on the sea-coast."

White, in his natural history of Selborne, clearly distinguishes between the stock-dove which frequents the beech-woods, and the rock-dove. "For my own part (he says in a letter to Pennant) I readily concur with you in supposing that house-doves are derived from the small blue rock-pigeon for many reasons. In the first place, the wild stock-dove is manifestly larger than the common

* It is migratory.

house-dove, against the usual rule of domestication, which generally enlarges the breed. Again, those two remarkable black spots on the remiges of each wing of the stock-dove would not, one would think, be totally lost by its being reclaimed, but would often break out among its descendants. But what is worth a hundred arguments is the instance you give in sir Roger Mostyn's house-doves in Carnarvonshire, which, though tempted by plenty of food and gentle treatment, can never be prevailed upon to inhabit their cote for any time; but as soon as they begin to breed betake themselves to the fastnesses of Armshead, and deposit their young in safety amidst the inaccessible caverns and precipices of that stupendous promontory."

Wild pigeons, as we have often noticed, not unfrequently take up their abode in the holes and fissures of old ruins, church towers or steeples, or similar places, and that at a considerable distance inland, nay, even remote from the sea. But whether these are true rock-doves, or house-pigeons returned to a state of independence, or a mixture of both, it is not always easy to determine. Great numbers frequent Canterbury cathedral;

mostly they are blue, but as other colours occur, it is not improbable that there is a mixture of house pigeons with true wild pigeons.

The markets of London during the season are supplied with vast quantities of young pigeons or squabs, mostly of a leaden blue colour; and in various parts, large dove-cotes are kept for the express purpose of remitting their produce to the market. It would be difficult to distinguish between these blue dove-cote pigeons and the wild rock-dove. We have seen vast flocks of dove-cote pigeons in France, amongst which the prevailing colour was blue.

The rock-dove feeds on grain and seeds of various kinds, yet not exclusively, for according to Montagu it is very fond of various species of snail, and especially that inhabiting the shell termed *Helix virgata*. About three broods are reared every season.

Turning from the rock-dove, to its tame representative, the common dove-cote pigeon, we may observe that in most countries it is kept in abundance for the supply of the table, and the markets of most large towns are plentifully supplied. In Persia, however, though

large dove-cotes, like towers, are conspicuous objects near towns and villages, it is not for the table that these birds are reared, but for the sake of the dung, which is used as a manure for melon grounds; it is in fact a sort of "Guano," the supply of which is regularly kept up, especially in the neighbourhood of Ispahan, where the melons are celebrated for their superiority. This manure is dear, but almost indispensable.

These dove-cote pigeons of Persia are all of a leaden blue colour; a white pigeon is in fact so rare as to be regarded as a sort of prodigy, and formerly was looked upon with superstitious aversion. In the outskirts of Ispahan, the pigeon-houses are striking objects, and at a distance might be taken for towers of defence or lofty strong-holds; they are generally surmounted by smaller towers, capped with a sugar-loaf spire, having apertures for the entrance and exit of the birds. The inside is replete with breeding cells, in close array, for the accommodation of many hundreds. From these towers vast clouds of pigeons issue, wheeling about in masses so extensive and compact, as to obscure the sun when they pass overhead. Yet it would

appear that such numbers are not now kept, as were formerly, for some of the pigeon-towers are almost or quite tenantless; still, however, the multitudes are very great, and the noise of their wings as they suddenly rush forth when alarmed is astounding. Our classic readers may remember Virgil's beautiful simile of the frightened dove rushing from her rocky cavern, of which the following is Dryden's translation:

"As when the dove her rocky hold forsakes,
Rous'd in a fright her sounding wings she shakes
The cavern rings with clattering, out she flies
And leaves her callow care, and cleaves the skies;
At first she flutters, but at length she springs
To smoother flight, and shoots upon her wings."

ÆNEID, l. v.

The clattering of a single dove is but a whisper compared to the roar of accumulated thousands.

In the east generally, pigeons, from the earliest times, have been great favourites and kept in multitudes. The author of the "Physical History of Palestine" says, "The inhabitants of Syria and Palestine are fond of pigeons, like the western Asiatics generally. Conspicuous dove-cotes are seen profusely in most of the villages, and vast flocks of wild doves appear about the time the corn begins

to ripen, and remain till the harvest is over. In Scripture, the allusions to doves and pigeons are so numerous as to evince that they were equally common and equally valued in ancient times.* In Egypt also, now, as anciently, incredible numbers of these birds are kept, and in the villages, the dwellings made for them are at the least as conspicuous as those which man builds for himself." We cannot definitely ascertain whether the pigeon was among the sacred birds of the ancient Egyptians.

Our account of the purpose for which pigeons are kept in such vast numbers in Persia recalls to mind a passage of some difficulty in the Second Book of Kings, chap. vi. 25,—"and the fourth part of a cab of dove's dung (sold) for five pieces of silver." Was it for this as a manure that such multitudes of pigeons were annually kept in Syria and Egypt? and is its use as such, a remnant of antique practice, still lingering in Persia?

* Jeremiah thus alludes to the wild rock-dove. "O ye that dwell in Moab, leave the cities and dwell in the rock, and be like the dove, that maketh her nest in the sides of the hole's mouth." Jer. xlviii. 28. Isaiah takes the following simile from the domestic or house-dove, of which great numbers were anciently kept in Palestine. "Who are these that fly as a *cloud*, and as the *doves* to their windows?"—Isaiah lx. 8.

Is the use of guano after all, an agricultural art of high antiquity? We will not trust ourselves to answer. The following passage from the Pictorial Bible gives a compendium of all that has been mooted on the subject. "The fourth part of a cab of dove's dung for five pieces of silver. This was about half a pint for 12*s.* 6*d.* There has been much diversity of opinion about the 'dove's dung.' Some of the rabbins inform us that it was used for fuel. Josephus says, that it was purchased for its salt. Some think it means grain taken from the crops of pigeons, which could of course get out of the beseiged town and feed in the open country; many believe that it was wanted for *manure*, and Bochart, followed by most modern commentators, contends that, the name though literally dove's dung means an article of vegetable food. As he observes, the Arabs give the name of dove's dung to a kind of moss that grows on trees and strong ground, and also to a sort of pulse or pea which appears to have been very common in Judæa, and which may be the article here indicated. Large quantities of it are parched and dried and stored in magazines at Cairo and Damascus. It is much used during journeys, and parti-

cularly by the great pilgrim caravan to Mecca; and if the conjecture be correct, it may be supposed to have been among the provisions stored up in the besieged city, and sold at the extravagant price mentioned in the text. It is clear that if dove's dung be really intended, it could not be used as an article of food, and then we are thrown upon its use as manure. This use is best exemplified in Persia. These form such essential articles of food in some warm climates, that vast quantities are consumed, and in besieged towns persons who have been rather delicately brought up have been known to pine away and die for the want of such essential provisions, even when corn was abundant. On this point, Mr. Morier observes, 'the dung of doves is the dearest manure which the Persians use, and as they apply it almost entirely to the rearing of melons, it is probably on that account that the melons of Ispahan are so much finer than those of other cities. The revenue of a pigeon-house is about a hundred tomauns per annum; and the great value of this dung which rears a fruit that is indispensable to the existence of the natives during the great heats of summer, will probably throw some

light on that passage in Scripture, where in the famine of Samaria, the fourth part of a cab of dove's dung was sold for five pieces of silver.' (Second Journey, p. 141.) We think that the alternatives lie between this explanation and that which Bochart has given, although neither of them seems entirely free from grounds of objection."

If the cities of the east, such as Samaria, resembled modern London and Paris, the utility of manure for the growth of vegetables would be out of all question, but such was not the case. Detached houses, with surrounding gardens,—large spaces, used for the rearing of culinary vegetables—streets rather resembling lanes than the streets of a European city of the present day, and the whole surrounded by a wall of brick, or mud and stones, with towers at given distances, — such was, and such is still a city of Western Asia; and when the uncouth catapult, the sling, and the bow were the only projectile weapons, these rude fortifications were more difficult to be carried than a town of modern Europe would now be (Vauban himself having fortified it) by a few thousand men with artillery, and the arts of modern warfare.

We may here leave the common dovecote, or farm-yard pigeon, and proceed to take a brief survey of the principal varieties, some of them of great antiquity, which naturalists generally agree have resulted from long culture in a state of domestication. These varieties are extremely numerous, and by inter-crossing, others are from time to time produced, to the delight or disappointment of the fancier, as he may succeed or fail in the accomplishment of his wishes.

The CARRIER, or HORSEMAN.—We do not separate between these birds, because we know of no difference between them: at all events, if any originally existed, it has become lost, and we believe the terms carrier and horseman are by most fanciers of the present day used synonymously. The carrier exceeds most other varieties of domestic pigeons in size; and is remarkable for the elegance of its shape. It is among pigeons, what the high-bred racer is among horses, and has been long celebrated for its rapidity of flight. It is evidently of eastern origin, and was known to the ancients.

The plumage of the carrier is close and firm, and the quill feathers remarkably rigid; the

colour is black, blue, or dun,—birds of the latter tint being highly prized, if perfect in other qualities. The neck is long and slender, the shoulders wide apart and strongly knit, and the breast muscular. The eye is animated, with the iris of a fiery red, a rosette or wide rose-like circle of white fungous skin, surrounds the eye, and is even elevated (in mature birds) above the level of the skull. This circle, about the size of a shilling, should be uniform,—free from irregularities, and well developed. The beak is long,* straight, and stout, especially at the base, which is surrounded by a large mass of white fungous skin, greatly elevated above the base of the upper mandible, and advancing on the forehead. This protuberance or wattle should be regularly formed, rise boldly, and spread broadly across the beak.† The head is long and narrow, and the skull should be flat or even depressed on the top, and of contracted breadth between the elevated rosettes. For perfect birds, great prices are demanded; and

* From an inch and a quarter to an inch and a half, along the gape.

† The fungous excrescence is only a development of the soft pulpy skin at the base of the upper mandible in the ordinary pigeons, where the nostrils are situated.

we certainly think that of all the varieties of the domestic pigeon none are so worthy of attention by those whose inclination leads them to the innocent amusement of cultivating fine races of the feathered tribes reclaimed by man.

Dr. Kitto, in his Physical History of Palestine, notices the carrier pigeon as being still kept in Syria, and we know that from very ancient times, it has been employed in the east as a rapid and not to be intercepted conveyer of intelligence. Bochart has collected numerous authorities on this subject, both in Greece and Syria. The following passage is from the pen of an accomplished zoologist in the Penny Magazine. "In one of his odes Anacreon has immortalized it, (the carrier pigeon,) as the bearer of epistles. Taurosthenes sent to his expectant father, who resided in Ægina, the glad tidings of his success in the olympic games, on the very day of his victory. Pliny speaks of the communication kept up between Hirtius and Decimus Brutus at the siege of Mutina, (Modena.) 'What availed Antony, the trench, and the watch of the besiegers,—what availed the nets stretched across the river, while the messenger was cleaving the air?' The crusaders employed them,

and Joinville records an instance during the crusade of Saint Louis. Tasso sings of one that was attacked by a falcon, and defended by Godfrey. It had a letter attached to its neck, which letter Godfrey, of course, reads, and is put in possession of all the secrets. In the very same way, Ariosto makes the Castellan di Damiatæ spread the news of Orrilo's death all over Egypt. Sir John Maundeville, knight, warrior, and pilgrim, who penetrated to the borders of China, in the reigns of our second and third Edward, thus writes:—'In that contree and other contrees bezonde thei han a custom, whan thei sohulle usen werre, and whan men holden sege abouten cytee or castelle, and they withinnen dur not senden out messengers with lettere for lord to lord, for to ask sokour, thei maken here letters and binden them to the neck of a *Colver*, and letten the *Colver* flee; and the *Colveren* ben so taughte, that they fleen with the letters to the very place that men wolde sende hem to. For the colveres ben norysscht in tho places, where thei ben sent to; and thei senden hem thus for to beren here letters. And the *colveres* retournen azain where as thei ben norisscht, and so they don commounly.'"

We learn from Dr. Russell that "this pigeon in former times was employed by the English factory, to convey intelligence from Scanderoon of the arrival of the company's ships in that port. The name of the ship, the hour of her arrival, and whatever else could be comprised in a small compass, being written on a slip of paper, was secured in such a manner under the pigeon's wing as not to impede its flight, and her feet were bathed in vinegar, with a view to keep them cool and prevent her being tempted by the sight of water to alight, by which the journey might have been prolonged, or the billet lost. The practice has been in disuse many years, but I have heard it asserted by an English gentleman, in whose time it still subsisted, that he had known the pigeons perform the journey (to Aleppo) in two hours and a half. The messenger had a young brood at Aleppo, and was sent down in an uncovered cage to Scanderoon, from whence, as soon as set at liberty she returned with all expedition to her nest. It was usual at the season of the arrival of the annual ships, to send pigeons to be ready at the port, and by all accounts if the bird remained absent above a fortnight

she was apt to forget her young, and, therefore, not fit to be trusted. Upon inquiring into the manner of training the pigeon for this service, I was told by some that she was at once sent down to Scanderoon in a cage; but I am rather inclined to believe what was affirmed by others, that she was taught by degrees to fly from shorter distances on the Scanderoon road."

It would appear that these pigeons, when let fly from Scanderoon, instead of bending their course towards the high mountains surrounding the plain, mounted at once directly up, soaring almost perpendicularly till out of sight, as if to surmount at once the obstacles intercepting a view of their place of destination. It is not often in the present day that the carrier pigeon is employed on really important services, yet in the late sir D. Wilkie's picture of the siege of Saragossa, a carrier pigeon is in the hands of one of the party, either returning with news, or about to be despatched. Doubtless, the great painter had good authority for it.

It must not be supposed that this peculiar breed of pigeon is exclusively fitted for the purposes above described; any breed of good

powers of flight will do, but this bird, from its swiftness on the wing, and its muscular energy, is doubtless superior; nevertheless, old birds, if not kept in active training, are heavy, and disinclined to very long flights. We once purchased a very young pair of black carriers, and having kept them shut up for a few weeks gave them their liberty; after several circles high in the air, they started off in one direction, straight as an arrow, till far out of sight. We gave them up for lost, and having paid a considerable sum for them, were not a little annoyed. This happened about eleven, A.M. At about four, P.M., while on the look out we heard a whirring of wings, and immediately the two birds settled on their dovecote, and were eager for food and drink. Let it be remembered that they had never been previously at liberty, and yet after a voluntary excursion of many miles, they returned with unerring precision to their home; this was repeated so often, till they began to breed, that it gave us no concern respecting their safety, the more especially as they flew above gun-shot reach.

Is it by the eye that these birds travel from long distances to their home? We

cannot doubt it. Hence, if very long distances are to be achieved, training is requisite; they must be accustomed by a graduated series of removals, to at least the greater part of the road; and even then, if a fog obscures their way-marks, they are apt to wander and be lost.

Occasionally we hear of trials of the power of the pigeon (we know not whether the birds are always carriers or not) which are not a little surprising. A given number of birds for example will be turned off in some town in Holland, Belgium, or France, destined for London, or *vice versâ;* we read of the safe arrival of at least the greater number, and of the short space of time in which the journey is accomplished. In such cases, two or three practised birds to take the lead will, no doubt, prove good guides to the rest, which, in their turn, having safely arrived, will guide others. Short distances, however, will easily be performed without much training. Our theory is as follows: a carrier pigeon is taken to a distance, say a hundred miles from home, it is turned loose, it mounts to a great elevation, and performs a series of circles, wider and wider still. At home, it has performed

the same. Now from any part of the circle, let it perceive an object, which while performing its circles at home, has caught its eye, it has at once a clue to the right direction; that object attained, a succession of others familiar to it are rapidly passed, till its home greets its keen and long-surveying powers of vision.

This idea struck us forcibly when viewing the prospect from Mont Cassel, near St. Omer. Though this conical mount, once a Roman military occupation, is of no very great elevation, we saw an amphitheatre around us of from fifty to sixty miles in nearly every direction, and across the Manche the white cliffs of the Kentish coast. If a long-sighted pigeon had soared above us, say at the elevation of one mile (its home being in London) we feel assured that its old familiar land-marks would have been at once discerned by it, and have been guide-posts, to direct it in its homeward flight.

Audubon speaking of the passenger pigeon of North America, says that specimens have been killed in the neighbourhood of New York, with their crops full of rice, which must have been collected in the fields of Georgia and

Carolina, those districts being the nearest, in which they could have collected a supply of that grain. The swiftness of the carrier pigeon is equal to that of the passenger pigeon, and is very great, but then much time is lost while it mounts and makes its circles of observation, before it starts fairly on its course. Perhaps the average rapidity is fifty or sixty miles an hour; but it can wing its way still more expeditiously, when eager to regain its home, and no very great difficulties have to be encountered. M. Antoine informs us that a gentleman residing in Cologne, called by business to Paris, laid a considerable wager that he would give information to his friends of his safe arrival, within three hours. The distance is a hundred leagues; the accomplishment of the object seemed impossible, and the wager was at once accepted. He had brought from Cologne two carrier pigeons, which had nestlings, and arriving at Paris at ten in the morning, he tied a letter to each bird and despatched them both at eleven precisely. One of these pigeons arrived at Cologne at five minutes past one o'clock, and in nine minutes afterwards the other came in; hence, supposing their flight to have been

direct from an elevation rapidly attained, it could not have been much below the ratio of a hundred and forty or fifty miles an hour. This was, indeed, an extraordinary instance of speed, to which we do not know a parallel, unless Montagu be correct, who estimates the flight of the Peregrine falcon, when pursuing its quarry, at the rate of one hundred and fifty miles an hour.

THE DRAGOON, OR DRAGON.—This variety presents, in an inferior degree, the characters of the carrier, and appears to be a cross breed between that variety, and the tumbler or ordinary dove-cote runt. It is smaller and lighter in contour than the carrier, with the carunculated skin at the base of the beak and around the eyes less developed, but with the general figure similar. It is a bird of great powers of flight, but though rapid for short distances, it wants the power of muscular endurance requisite for the swift accomplishment of very long journeys.

THE POUTER.—This large pigeon, formerly highly valued by fanciers, and bred with much care, and no little expense, is originally the product of a cross between the dragoon and the old Dutch cropper, so called from the

development of its crop; but which, in form and proportions, had little to recommend it. All pigeons are capable of inflating their crop with air, and thus of distending it. In the pouter, the crop is remarkably capacious, and, when inflated, assumes an almost globular form, extending from the under mandible to the top of the chest. This vast inflation of the crop does not, in our eyes, add anything to the beauty of the bird, as it produces an appearance of distortion, while the bird in order to carry it with ease is obliged to carry itself upright, with the legs straight and stiff, in a line with the erect body. Some think this gives the bird a majestic air, but it seems to us to be a stiff unnatural strut. The pouter often measures eighteen inches in length from the point of the beak to the end of the tail; the legs, or tarsi, are long and covered with fine white down; the back is concave, and the tail large. The general colours are blue, rufous, or fawn, regularly pied with white; we have seen many of a pure white, but these are not preferred. In the arrangement of the markings, and in various minor details, pigeon fanciers find much to interest themselves; to us they appear un-

worthy of serious attention. Two varieties of the pouter are respectively termed the Parisian pouter and the uploper; but of these we do not know that we have ever seen any specimens. The former is beautifully mottled and variegated.

THE BARB.—The name of this variety seems to indicate that it was originally brought from the north of Africa. It is a bird of remarkable appearance; there is a small carunculated wattle at the base of the beak, which latter is short and thick, and a rather large naked circle of bright red spongy skin surrounds the eye; a short crest of prettily circled feathers generally ornaments the back of the head. The plumage is of a uniform black, occasionally dun.

THE FAN-TAIL.—Among the more curious varieties of the domestic pigeon must be enumerated the fan-tail or broad-tailed shaker. These appellations it acquires from the peculiarity of its tail, which is carried in a manner very similar to that of a common hen, but rather more expanded. In proportion to the size of the bird, it is also more ample, being composed of four and twenty feathers, and, in some cases, even six and thirty, instead of the

ordinary number, twelve. This development of supernumerary tail feathers is very remarkable, and would alone give the bird a strange aspect; but besides this, it has the habit of throwing back its slender delicate neck till the head almost touches the tail, while, at the same time, the neck quivers with a tremulous motion. In this attitude, the chest is thrown forward, and the wings droop, while the bird seems to exult in the display. The beak is very short, the head small, and the plumage generally of a pure snowy white. Pied birds are not in estimation. There is a variety called the narrow-tailed shaker, which appears to us to be nothing more than a cross between the fan-tail and some common breed. Neither of these birds have much power of flight.

THE JACOBINE, OR CAPPER.—This pretty little variety is remarkable for the development, silkiness, and reversion of the plumes of the back and sides of the neck, which are so disposed as to form a sort of full hood or muff in which the head is almost buried. The head is small, the beak short, the iris of the eye of a clear pearl colour. The plumage varies in colour, but fawn-yellow birds are preferred: the head, the quill-feathers, and the tail, are

white. In powers of flight the jacobine is very inferior, but is much valued for its beauty. There are two allied varieties, the ruff and the capuchin, neither of which, however, are so much esteemed as the jacobine, the general characters of which they exhibit, but in an inferior degree.

THE TURBIT.—This is a small pigeon, remarkable for a frill on the top of the chest, consisting of a tuft of feathers, which opens and spreads both ways laterally with a curl; this is termed a "purle." The head is small, the beak short, the colour various, but the under parts and quill feathers are usually white. An allied variety is called the owl, from the crookedness of its beak, which is short, stout, and curved. Its chest is frilled.

THE NUN.—This pigeon is very pretty, and much admired from the contrast of its markings. The general plumage is white, with the exception of the head, quill feathers and tail, which are yellow, blue, or black; the latter the most preferred. On the top of the coloured head, is a white tuft of carded feathers, which, from a fancied resemblance to a veil, has obtained for this variety its appellation. The beak is small, the iris pearl-white. A variety

called the helmet is closely allied to the preceding, but instead of a full tuft or hood on the head, has a crest somewhat resembling that of a helmet. In other respects, there is no difference, except, perhaps, that the latter is rather the largest bird.

The Trumpeter.—This variety is not often seen. It has a tuft on the back of the head, and another springing above the base of the beak over the forehead; the legs and toes are feathered. The plumage is generally mottled. Its cooing in the spring is loud and harsh, whence it has obtained the name of trumpeter.

The Tumbler.—The tumbler is a small pigeon, much esteemed for the peculiarity of its flight, and when a flock is on the wing, the sight is not uninteresting. The title of tumbler is given in allusion to the backward summersets, often several times repeated, which these birds make in the air, but whether from amusement, or from some cause or other they become overbalanced, is not very clear; we have observed that when they prepare to alight, these somersets are most frequently repeated, and as it would seem, hinder the bird for some time from accomplishing its object. Perhaps, however, this is all in playfulness, for the

tumbler is a bird of great powers of flight, and mounts to such an elevation, as sometimes to be scarcely visible; it can also continue on the wing for several hours together, a circumstance which gives it value in the eyes of many, who delight to watch the circular movements of a flock of these birds, in close array, soaring at a vast altitude.

The tumbler pigeon varies in colour, whence have arisen various distinctive appellations, as bald-headed tumblers, the head being white; and bearded tumblers either blue or black, with a white moustache or stripe, extending from the base of the beak. The head is small and round, the beak short, and spine-shaped, the iris a clear pearl-white, the chest full and broad, the neck rather short, but slender, and the general contour compact. This variety is kept in great abundance in London.

The Almond or Ermine Tumbler.—This variety, though derived from the ordinary tumbler, is not trained to flight, but is kept for its beauty, and the rich and varied admixture of its colours. It is much less than the common tumbler in size, and the beak and head are remarkably small; the plumage is variegated; yellow, black, white and brown,

or gray, being intermingled in streaks or dashes. It is not until after several moults, that the perfect colours are attained.

The above list of varieties of the domestic pigeon contains all of any note; several others, indeed, might be enumerated, as the Leghorn, the Spanish, and the Friesland Runt, (the latter having all its feathers reverted,) the Lace, the Finniken, the Spot, etc., but they are seldom to be seen, nor is any value attached to them.

THE SWIMMING, OR NATATORIAL GROUP.

In the natatorial group, or order, we are presented with a vast assemblage of birds, more or less decidedly constructed for aquatic habits, and the more so the more exclusively they tenant the waters of the sea, inlets along coasts, the mouths of wide rivers and extensive lakes. Some, indeed, are so exclusively formed for passing the period of their active existence, and for pursuing their prey in the water, that on the ground their movements are embarrassed and awkward in the extreme, and, in a few, the powers of flight are utterly abrogated. We are now pointing to extreme cases on the one part,

for there are others in which the powers of flight are wonderful, the water serving only as a reservoir of food, which is snatched on or near its surface, and as an occasional resting place, the bird floating buoyantly, till it soars into the air. As examples, we may adduce the terns, the gulls, the albatross, the petrels, etc., birds thickly plumed, and which, in pursuit of their prey, make only slight plunges into the sea, or skim it off from the rolling waves, and seldom settle, except for a few minutes.

Between these extreme links in the chain there are others of intermediate position, and among them is the family comprising ducks, swans, and geese.

We shall not attempt to enter into an analysis of the numerous sub-divisions, of this extensive family, (termed *Anatidæ*,) but only offer a few general observations.

In the ducks, swans, and geese, the body is more or less boat-shaped, and covered with dense plumage, there being an under-layer of down next the skin. The feathers repel the water, which runs off them. The legs are placed considerably backwards, so as to render the support of the anterior part of the body apparently laborious, and from this cause and

the contour of the limbs, their gait on the ground is waddling. The three anterior toes are united by webs, but the posterior toe is free, yet often lobated, or paddle-shaped. The bill is large, and more or less depressed, sometimes very broad; both mandibles are covered with a sort of leathery skin abundantly supplied by nerves of touch; at the base of the upper mandible there is a sort of cere, (in which the nostrils are placed,) in some more extensive than in others, and at the tip of the upper mandible is a sort of flat incurved hard nail, (called *dertrum.*) Along the edges of each mandible extends a series of laminated processes, sometimes remarkably developed and in close array, these serve as strainers, enabling the bird to sift the ooze or mud through the beak, and retain worms, insects, and vegetable matters. The tongue is large, fleshy, sensitive, and furnished along its edges with filamentous pectinations, which aid the beak in the retention of food. The eyes are defended by a strong *membrana nictitans,* and both sight and hearing are acute. The voice is hoarse, harsh, and clanging: in many species, there is a sort of osseous drum at the lower portion of the windpipe, in some there are certain dilatations,

and in others the windpipe makes singular loops or flexures before entering the cavity of the chest to merge into the lungs.

In a state of nature, the males and females pair, the young are hatched, covered with down, and soon take to the water under the guidance of their parents. With respect to food, it is very various; some appear to be herbivorous, others feed equally upon animal and vegetable substances, and greedily devour slugs, caterpillars, and aquatic insects. Others live on crabs, and marine shellfish, which they dive with great skill to obtain.

Though these birds are aquatic in their habits, and swim well, yet some are much more so than others; the goose, which grazes on corn lands and fields, is far less aquatic than the wild or even tame duck, and resorts to the water principally for safety. The cereopsis goose of Australia is still more decidedly terrestrial. On the other hand, some species, as the New Holland musk duck, the steamer, or racehorse duck of the Falkland isles, and others, are as aquatic as the divers (*Colymbus.*)

Most, if not all the anatidæ, in the northern hemisphere at least, are migratory, and associated in flocks perform at due times northward

and southward migrations, the former taking place on the early breaking up of winter, when they revisit their old breeding haunts, the latter in autumn, when the cold of the northern regions commences. In temperate latitudes, however, like our island, many home-bred water-fowl not only remain during the winter, but are joined by northern visitors. During flight, they assume a definite order, proceeding either in single file, or in the form of a triangle, the leader occasionally changing places with others. Even when traversing the ground they observe a degree of order in the line of their march.

Most species incubate on the ground, but some in the holes of trees or on the broad flat top of large old pollards, and in situations of a similar character. Under these circumstances the parents convey the young to the water in their beak. The summer, or wood duck, of America, (*anas sponsa,*) pursues this singular plan; and even the common wild duck occasionally. Certain species, as the *anas arborea,* not only nestle but habitually perch in trees.

The Domestic Duck.—This species belongs to the genus *anas* as restricted by modern naturalists, the male being characterised (at

certain seasons) by curled feathers in the upper tail coverts. The wild origin of our domestic duck, is unquestionably the well-known species, *anas boschas*, usually termed the mallard, and which appears to be generally distributed throughout the temperate and colder regions of Europe, Asia, and North America. The mallard is smaller than the tame duck, of a lighter and more graceful figure, and much more quick, observant, and prompt in its actions. In the more northern regions, it is decidedly migratory.

The wild duck pairs early in March, sometimes in the latter part of February, but the male deserts his mate, when the duty of incubation commences, leaving the care of the eggs and young entirely to the female. Hence in the month of May it is not uncommon to see small flocks composed exclusively of males, whose mates are fostering their brood. Wilson says that both parents take charge of their young, but this is an error; the female, only, rears them, as was first, we believe, pointed out by Mr. Selby. It is in May, moreover, that the male begins to change his colours, losing the curled tail feathers, and the glossy green of the neck, and assuming a plain dress,

approximating to that of the female;* nor is it until the autumnal moult, that he recovers his brilliant tints and fine pencilling. In domestic birds, this change does not occur, or only very partially.

The nest of the wild duck is composed of dried rushes, grass, and coarse stalks, and is usually placed on the ground under the covert of brushwood, or amidst a bower of sheltering herbage, not at any great distance from the water. Occasionally, however, other sites have been selected.

When her nest is approached, the wild duck, like the lapwing, puts various artifices in practice in order to draw off the intruder: she flutters along as if lamed, pretends to escape seizure with difficulty, when having succeeded in her object, she rapidly leaves her astonished pursuer. On quitting her nest, during incubation, for a supply of food and water, she usually covers the eggs with down and dry herbage, no doubt in order to conceal them from observation, and, perhaps, also to preserve their temperature. They vary from ten

* Mr. Selby regards it as an actual change of colour in the feathers, and not the result of a change of plumage or moult.

to fourteen in number, and are of a bluish white colour.

The food of the wild duck consists of grain and vegetable matters, slugs, aquatic insects, tadpoles, the fry of fishes, and other aliment. A large bony drum is placed at the lower portion of the windpipe of the male, (both wild and tame,) just within the chest.

The domestic duck exceeds the wild bird in size, but is neither so alert nor graceful, and domestication has deprived it of a large portion of its original instincts. Instead of pairing with one mate, the male, as may be seen, leads his troop of females, steering proudly at their head, but, unlike the gallant chanticleer, he neither defends them, nor calls them to partake of any delicacy. The domestic duck varies considerably in size, and the colour of the plumage; and many breeds are particularly noted. Among these is the large white Aylesbury breed, which is prevalent in Buckinghamshire, where the rearing of ducks for the markets constitutes at least a part of the business of many cottagers. The Rhone duck, another noted breed, is large, with a dark-coloured plumage, and celebrated for the goodness and flavour of its flesh.

The tame duck often lays more eggs than she can well cover during incubation, but she should never be allowed to sit on more than twelve or fourteen. It is a common practice to put duck eggs under common hens, nor do the latter when the ducklings are hatched distinguish between them and their natural brood. The agitation of the poor hen when her web-footed charge betake themselves to the water, into which, instinct-guided, they fearlessly plunge, cannot have escaped the observation of every reader. That the hen should foster the ducklings she has hatched is not more strange than that the hedge-sparrow or wagtail should rear the young cuckoo, to the destruction of their own young; yet in some instances the hen distinguishes a strange nestling. Some years since we placed a nestling green linnet under a hen, brooding over her just hatched progeny: she at once rejected it with anger, and if not prevented would have killed it. Was this an accidental occurrence, or would it always on trial occur?

Though the young ducklings take early to the water, it is better that they should gain a little strength before they be allowed to venture into ponds or rivers; a shallow vessel of

water filled to the brim and sunk in the ground will suffice for the first week or ten days, and this rule is more especially to be adhered to when they are under the care of a common hen, which cannot follow them into the pond, and the calls of which when there they pay little or no regard to. Rats, weasels, pike, and eels, are formidable foes to ducklings; we have known entire broods destroyed by the former, which having their burrows in a steep bank around a sequestered pond, it was found impossible to extirpate. Chickens which traverse the fields and farmyard, and are at all times more exposed to observation escape many dangers that assail ducklings. These accidents excepted, ducklings are easily reared; they soon pick up worms, slugs, and insects, and may at first be fed on meal of any kind mixed with boiled potatoes crushed fine. In their selection of food they exhibit no fastidiousness, and require neither penning up nor cramming, to acquire plumpness. It has been well observed that they eat as if they considered it their duty to prepare themselves for the table, and give no trouble about it.

To a kitchen-garden, in the autumn or summer, when they can do no mischief by

devouring delicate salads and young sprouting vegetables, a troop of ducks does good service. They are industrious searchers of snails and slugs, wood-lice and millepedes, and gobble them up with great avidity. On snails and slugs they will get positively fat.

Ducks—and the same observation applies to geese—should have their own exclusive dormitories. It is a bad plan to put them into the roosting place of fowls; they should have their own chamber. In the gardens of the Zoological Society, the waterfowl have boxes, or wooden huts, placed around the margin of their pond, or on little islands in it. The plan answers excellently, but a wire fence forming an inclosure, so as to prevent the ingress of rats and weasels, is, in this case, necessary; we do not, however, pretend to recommend the adoption of it under ordinary circumstances.

There are few countries in which ducks are kept in such numbers as in China; they are there hatched by means of artificial incubation. Numerous possessors of great flocks of these birds keep them in boats on the Canton river, and turn them out at stated times along the banks to feed. They are singularly trained; when their keeper wishes to call them into the

boat, which communicates with the bank by means of a narrow board, he makes a signal call, and all the ducks rush simultaneously forward; the first which gains the boat is ordinarily rewarded with a handful of rice, but the last undergoes a smart chastisement; of this the birds from repetition are well aware, and hence, every one struggles to get before his neighbour, partly incited by hope, but more by fear. Of course, one must be the last, but it knows what awaits it.

In Persia, the duck and goose are seldom kept, nor are these birds in any request for the table; in fact, it would seem that they are seldom eaten.

Among the ancient Egyptians, ducks were in high request, and representations of these birds were favourite subjects for their paintings. We learn from Herodotus that salted ducks were eaten without any other cooking, and the mode of pickling them is seen in pictures from Thebes; in one of these, two men are seen "carrying the ducks on their shoulders, and a little further, a man putting them into earthern vessels, formed like Roman amphoræ, probably containing salt or pickle. In the extreme left of the picture are two men

seated, one of whom seems as if he were rubbing something into a duck; one hand is closed, as it would be if it were full of salt, and with the other he is raising one of the wings apparently for the purpose of rubbing in the salt. The other figure appears to be plucking the feathers off the neck of a duck, but Roselini describes him as sprinkling a handful of salt upon it." In the British Museum, among the provisions found in a tomb in Egypt, are two birds, of course very dry and shrivelled, which appear to us to be young ducks, or teal, or at least small water-fowl of some species.

Whether ducks, geese, or other waterfowl were used as food by the ancient Hebrews, does not appear from any passage in the Scriptures. They do not seem to have been interdicted, and as the Hebrews must have witnessed the extensive consumption of these birds while sojourning in Egypt, especially ducks and geese, they may, perhaps, have adopted their use; nevertheless, we suspect that, influenced by their feelings of aversion with respect to Egyptian rites and ceremonies, the Hebrews may have regarded the duck and goose with the same disgust as they did the dog, which was a favourite in Egypt.

In modern Egypt and Syria, though wild water-fowl are abundant, still neither tame ducks nor geese are often to be seen, and the same observation applies to other parts of western Asia. The reason is that the Moslems very rarely eat these birds, whether tame or wild, while on the contrary the common fowl is reared in vast abundance.

We must not forget that in Europe, besides the ordinary tame duck, we have in our farm yards a very distinct species, namely, the musk, or as it is often erroneously called the Muscovy duck,* (*Anas moschata.*) It is the *Canard musqué* of Buffon, and deserves the title from the strong scent of musk which it exhales.

This species will inter-breed with the common duck, but we believe the progeny are not fertile. The musk duck greatly exceeds the ordinary kind in size, and, moreover, differs in the colours and character of the plumage, in general contour, and the form of the head. The general colour is glossy blue-black, varied more or less with white; the head is crested, and a space of naked

* Ray says, "Muscovy duck, not because it comes from Muscovy, but because it exhales a somewhat powerful odour of musk;" but surely the word might be better chosen.

scarlet skin, more or less clouded with violet, surrounds the eye, continued from scarlet caruncles on the base of the beak; the top of the head is crested; the feathers of the body are larger, more lax, softer, and less closely compacted together than in the common duck, and seem to indicate less aquatic habits. The male far surpasses the female in size; there are no curled feathers in his tail.

In habits, the musk-duck presents nothing very different from the other species, excepting that the male is fierce and quarrelsome; when enraged, its eyes and demeanour betray its violent emotions, it depresses its head, and utters hoarse notes in a deep tone. The flesh of this species, and also of the mixed breed, is said to be very good, but we have never tasted it.

With respect to the wild origin of the musk duck little seems to be definitely known, nor is it ascertained at what precise period it came into Europe. Most accounts refer to South America as its native country. Ray, in whose time it was known as a domestic bird in England, terms it *Anas sylvestris Braziliensis*, the wood duck of Brazil. Linnæus, in his Fauna Suecica, says, "It is reared on the farms of

the gentry, but it is not an indigenous bird in Sweden." Marcgrave states the musk duck to be a native of Brazil and Guiana, and terms it *Anas sylvestris, magnitudine anseris*—a wood-duck of the size of a goose.

Buffon says that these birds were introduced into France in the time of Belon, about 1540, who termed them *Canes de Guinée.*

THE DOMESTIC GOOSE.—The goose, like the duck, has been domesticated from time immemorial; but its wild origin appears to be clearly ascertained. We may commence the history of this species by observing, that four European species of wild goose, closely allied to each other, are known to naturalists; namely,—the white-fronted goose,* (*Anser erythropus*—Fleming; *A. albifrons*—Bechst.;) the bean goose, (*Anser ferus* — Flem.; *A. segetum*—Steph.;) the pink-foot goose, (*Anser phœnicopus*—Bartlett, in Proc. (Zool. Soc. 1839, p. 2;) and the grey-lag wild goose, (*Anser palustris* — Flem.; *Anser cinereus* Meyer.) Of these, the first three are only periodical visitants to our island, and the temperate parts of Europe, and western Asia, arriving on the approach of winter, and retiring

* This species is also a native of North America.

to the high northern latitudes to breed on the return of spring. But the grey-lag wild goose, which is the origin of our domestic race, was once a permanent resident in our island, and bred in great numbers, in the fenny counties. From the causes alluded to in our notice of the wild duck, it is now entirely banished from its former haunts, and though a few small flocks visit our island during the winter, it is far more rarely to be met with, than either of the three preceding winter visitants.

Though partially migratory, the grey-lag cannot be considered as a high northern bird, for, according to M. Temminck, it seldom advances much beyond the fifty-third degree of north latitude, its geographical distribution extending over the central and eastern parts of Europe, northern Asia, and some parts of western Africa, where it haunts marshes, lakes, and the borders of inland seas.

Mr. Gould, in his birds of Europe, says, "The grey-lag is known to inhabit all the extensive marshy districts, throughout the temperate portions of Europe generally, its range northward not extending beyond the fifty-third degree of latitude, while southwards it extends to the northern portions of Africa

eastwardly to Persia, and, we believe, is generally dispersed over Asia Minor."

The grey-lag exceeds the other species which we have alluded to, in size, and is sometimes found to weigh ten pounds; the general plumage is cinereous; the shoulders and rump, light grey; breast and belly, white, sometimes spotted with black; the bill, two and-a-half inches long; more robust, deeper, broader, and the laminæ much more developed than in the bean goose, and of a dull yellow, inclining to flesh colour towards the nail, which is white; in summer, the bill assumes a redder tint; legs and feet, pale flesh colour; wings, when closed, even with the end of the tail. The young of this species are darker than the adults, but the grey upon the shoulders and rump, the form of the bill, and colour of the legs and feet, will always distinguish them from the young of any of the other species.

The domestic goose is a bird of no little importance. It not only figures with acceptance at the table, but its feathers are of great commercial value, and for the sake of them alone, thousands are kept in different counties, in order to meet, in some measure, the demands of the market, which nevertheless receives

supplies from foreign parts. The feathers of the body properly dressed and sorted are in great demand, as all know, for beds, cushions, pillows, etc. The quill feathers furnish us with a simple instrument, efficient for good or for evil, as he in whose hands it is may use it.

Among the ancient Britons, the goose, though probably kept in a tame state, was not eaten, as it would appear, from superstitious motives. On the occupation of this island by the Romans, these Druidical observances by degrees vanished, and we may well believe that when Britain became (with the exception of its extreme north) a Roman province, neither fowls, hares, nor geese were exempted from death by the hands of the obdurate cook, the "*sævus coquus*," as Martial calls him.

Of the history of the goose in the Saxon era we can collect but little; even then, as it would seem, it was doomed to bleed at Michaelmas, and to the present day is Michaelmas a fatal time for geese. A roast goose upon the table on that day is a dish most undoubtedly "*more majorum*." Nor is the plucking of live geese (a custom perhaps of Roman introduction) of less antiquity, as their quill

feathers, if pens were then but in small request, were in perpetual demand for arrows and cross-bow bolts.

Though the domestic goose is very generally kept by farmers and cottagers throughout our island, yet, in particular counties, more attention is paid to the management of large flocks of these birds, with an express view to profit, than in others. Lincolnshire, for example, has been long celebrated for the multitudes of geese kept in the fenny districts. In Somersetshire, and also in some parts of Scotland, they are reared in great numbers. In Lincolnshire, (in Pennant's,) a single person frequently possessed a thousand adult geese, each of which on an average reared seven goslings, so that in the course of the season his stock amounted to eight thousand. The same observations will, more or less, apply to other parts of the country in the present day. In March, when the young geese are strong enough to travel, large flocks are driven by slow degrees from great distances to London, where they meet ready purchasers, great numbers being brought up by professional feeders of poultry, who fatten them for the poulterer, or salesman. Oats, oatmeal, peas, milk, etc.,

constitute the fattening diet on which they are fed, and in a short time they are ready, as *green* geese, for the market; and are in high request, though for ourselves we prefer a stubble-fed goose in autumn in good condition, but not (as too often is seen in the London poulterers') overladen with oily fat. It is however, to the farmer, and not the great feeder of these birds, that we must look for a really stubble-fed goose at Michaelmas.

The following extract from the Penny Cyclopædia, will convey a good idea of the mode in which poultry are managed by the feeders for the London markets.

"Cleanliness, punctuality, and regularity prevail; the business is conducted as it were by machinery, rivalling the vibrations of the pendulum in uniformity of movement. The grand object of preparing not only geese, but poultry in general, for market, in as short a time as possible, is effected solely by paying unremitting attention to their wants,—in keeping them thoroughly clean, in supplying them with proper food, (dry, soft, and green,) water, exercise-ground, etc. On arriving at the feeders, they are classed according to condition, etc.; they soon become reconciled to their new

abode and to each other. They are fed three times a day; and it is truly astonishing how soon they acquire the knowledge of the precise time, marching from the exercise-ground to the pens, like soldiers, in close column. Goslings, or young geese, come to hand generally about the month of March, after which a constant and regular supply arrives weekly throughout the season. At first, they are fed on soft meat, consisting of prime barley or oatmeal, afterwards on dry corn. An idea prevails with many, that any sort of corn will do for poultry, this is a grand mistake. Those who feed largely know better, and invariably make it a rule to buy the best. The Messrs. Boyce of Stratford, whose pens are capable of holding the extraordinary number of four thousand geese, independent of ducks, turkeys, etc., consume twenty coombs of oats daily, exclusive of other food." Who, not acquainted with the great metropolis, would suspect that a commercial concern, such as that noticed above, connected merely with the production of poultry for the markets, should exist, involving, as it must do, no small amount of capital and labour?*

* The following paragraph appeared in several of the papers.

Many small farmers and cottagers are in the habit of keeping flocks of geese on commons, and where the pasturage is not rendered bare by sheep, as is too often the case, the plan is advantageous; but even when the pasturage is good, a supply of oats or barley, morning and evening, should be allowed. Where the pasturage is bad, the old geese become thin and debilitated; and the young broods never thrive, and too often perish from want of sufficient nutriment. In such a plan of starvation, arising either from neglect, or a sordid disposition, there is not only abominable cruelty, but a positive loss of profit.

We are not among those who revolt at the quick, and therefore merciful, destruction of animals given to us by Almighty Providence as needful and salutary food; but we abhor barbarity. In old times, and also in modern days on the continent, a dreadful system of torturing geese has prevailed, with no other object than to produce a diseased enlargement of the liver, for the preparation of a dish, or rather *pâté*, said by epicures to be of exquisite

"Mr. Robert Fuller, a poulterer, of Boston, killed last week for the London Christmas market, 2400 geese, 1000 ducks, 500 turkeys, which altogether weighed upwards of twenty tons.—"Lincolnshire Chronicle," December, 1845.

flavour. This pâté (*pâté de foie gras*) is in great request in France. The wretched geese are fastened, nailed by the feet to a board, placed before a hot fire, crammed with food, and supplied with drink. In this situation they pine, fever wastes away their flesh, but the liver becomes enormously swollen; and this is the great desideratum.* Such it was also with the Roman epicures of ancient times. But a subject so repulsive need not detain us, yet, alas! we leave it but to notice a practice equally horrible, and we think but little less justifiable; we allude to the plucking of live geese, practised in various places where these birds are kept for the profit, both of flesh and clothing, as sheep are by the grazier. Sheep, however, are mercifully sheared.

According to Pennant, "geese are plucked five times in the year; the first plucking is at Lady-day, for feathers and quills, and the same is renewed four times more between that and Michaelmas for feathers only. The old geese quietly submit to the operation, but the young ones are very noisy and unruly. I once

* Ducks are treated in a similar manner. Geese are reared in Languedoc and Alsace; ducks in Lower Normandy and Languedoc. The duck's liver-pies of Toulouse, and the goose-liver pies of Strasburg, are highly celebrated.

saw this performed, and observed that goslings of six weeks old were not spared, for their tails were plucked, as I was told, to habituate them early to what they are to come to. If the season prove cold, numbers of the geese die by this barbarous custom. When the flocks are numerous, about ten pluckers are employed, each with a coarse apron up to his chin. Vast numbers of geese are driven annually to London, to supply the markets; among them are all the superannuated geese and ganders, which, by a long course of plucking, prove uncommonly tough and dry. The feathers are a considerable article of commerce; those from Somersetshire are esteemed the best, and those from Ireland the worst."

Times have greatly changed since Pennant wrote, and worthless geese find but little acceptance in the London markets; but the system of plucking, which he describes as he saw it practised in Scotland, is still continued, and we believe on very nearly the same plan, in many places. The annual mortality among geese where this system prevails, as Lincolnshire and Ireland, is very great, and the birds that live through several operations, become thin, feverish, and scarcely fit, or rather posi-

tively unfit, to eat. The excuse for this barbarity is that the feathers thus obtained are superior in elasticity to those plucked from the dead bird; besides which a live bird will constantly renew its plumage to undergo repeated strippings, and thus bring increase of profit, without the necessary destruction of the sufferer.

Both the feathers and quills of the goose have to undergo a certain preparation, in order to render them fit for the sale of the upholsterer or stationer. By various processes and by being subjected to heat, the vascular membrane adherent to the barrel, both externally and internally, becomes dried up and shrivelled, and all fatty, or oleaginous matter is removed.

The management of geese in ancient Italy appears to have differed but little from that practised in modern France and England; nor—though according to Livy, a flock of geese by their loud outcries saved the Roman capitol from the Gauls, when the watch dogs slept—did the Romans treat their geese very mercifully. It is true that annually, on the return of that memorable day, a silver goose was carried through the city in solemn procession, and dogs were sacrificed, and that

consecrated geese were kept in the temple of Juno, and were well lodged and fed, still swollen and diseased geese livers were in great request; and geese were plucked alive, for their feathers were of as much use as in the present day; those of the white birds being especially valuable. In some places the plucking occurred twice in the year. Great numbers of geese were at certain seasons annually driven to Rome, and, according to Pliny, some came from almost incredible distances. "It is astonishing (he says) that these birds will travel on foot from the Morini* even to Rome. The tired ones are put first, and the rest, by a natural crowding together, push them forward. The plumage of the white ones is an additional source of profit. They are plucked in some places twice a year, and soon recover their feathers. The down nearest the body is the softest, that from Germany the most esteemed. There the white ones, of inferior size, are called *ganzæ*, (modern German, *gans*, a goose; *gaas*, Danish; *gas*, Swedish; gander, English for the male.)† Their feathers fetch five denarii a pound."

* The Morini were a people of ancient Belgic Gaul, inhabiting the territory around modern Calais, the Pays de Calais.

† The gander is usually white, and though longer in the body appears to be less bulky than the female.

In some parts of modern Italy, the goose is in little request for the table, though the system of plucking off its feathers while alive, is still continued.

In ancient Egypt, both the common and a distinct species, the Egyptian goose, or Vulpanser, (*Chenalopex Ægyptiacus,*) were kept tame and reared in vast numbers, as frequent paintings and sculptured representations of these birds attest. Herodotus says, that the Chenalopex* was sacred in Egypt. But the author of Egyptian Antiquities, observing that it is of frequent occurrence on the sculptures, does not consider it to have been a sacred bird; "unless (he adds) it may have some claim to that honour from having been a favourite article of food for the priests." A place in Upper Egypt had its name Chenoboscion, or Chenoboscia, goose-pens, from these animals being fed there, probably for sale, though these may have been sacred geese; for we are told that the goose was a bird under the care of Isis.

The Chenalopex, or Egyptian goose, is abundant in a wild state, along the banks of the Nile, and is distributed over the whole of Africa;

* This word means fox-goose, a name given in allusion to the bird's cunning.

occasionally it visits the southern parts of the European continent, and is not unfrequent in Sicily. In England it is kept as an ornament to sheets of water in parks and pleasure grounds, where it breeds freely; hence it happens that half-wild individuals which have escaped from their inclosure, are occasionally, sometimes even frequently, shot, leading those not acquainted with the bird, to take it for a British species. Its colouring is very beautiful, and its pace on the ground far more easy and graceful than that of the common goose.

Two species of geese, besides the ordinary goose, are often seen domesticated in our island; these are the Canada goose, (*anser Canadensis,*) and the Chinese goose, (*anser Cygnoïdes.*) "The Canada goose is the ordinary wild goose of the middle and boreal regions of North America; and is a migratory bird, breeding in the higher latitudes, within the arctic circle; whence, on the approach of winter, vast flocks wing their way southwards, where every means for their destruction are in active operation. In the fur countries, their appearance on their northward return in the spring, is hailed with joy; for it is upon the flesh of this bird, that the natives of the woody and swampy

districts chiefly depend for their sustenance during the summer. About three weeks after their first appearance, the Canada geese disperse in pairs throughout the country, between the fiftieth and sixty-seventh parallels to breed, retiring at the same time from the shores of Hudson's Bay. They are seldom or never seen on the coasts of the arctic sea; in July, after the young birds are hatched, the parents moult, and vast numbers are killed in the rivers and small lakes, when they are unable to fly. When chased by a canoe, and obliged to dive frequently, they soon become fatigued, and make for the shore with the intention of hiding themselves, but as they are not fleet they fall an easy prey to their pursuers. In autumn they again assemble in flocks on the shores of Hudson's Bay for three weeks or a month previous to their departure southward." In the territories of the Hudson's Bay Company, these birds are barrelled for use, and the feathers are imported into England. Those taken on the approach of the cold season, during their southward migration, in Canada, and within the states, are frozen in their feathers, and preserved for winter consumption.

Though the ordinary European tame goose is kept in North America, the Canada goose is also kept there as a domestic bird, and is said to thrive better than the former. In France and England it has also become domiciled, and interbreeds with the common goose; the hybrids are highly esteemed for the very superior flavour and delicacy of their flesh. Bewick observes that the Canada goose, now one of our domestic birds, "is as familiar, breeds as freely, and is in every respect as valuable as the common goose." It is said to be extremely watchful, and more sensible of approaching changes in the atmosphere than our ordinary species.

The Chinese goose or swan goose (*anser Cygnoïdes*) in its general form, the length of its neck, and the protuberance at the base of its beak, reminds us of the swan, and appears to take an intermediate station between the geese and swan tribes. It rather exceeds the ordinary goose in size, and freely breeds with it, so that the pure race is less frequently to be seen than formerly, at least the mixed breed has more frequently come under our notice. The Chinese goose is originally from China and other parts of Asia, and also from Africa.

It is the *Oie de Guinée* of Buffon. Individuals are sometimes to be met with almost purely white, with a brown mark down the back of the neck. As an ornament of ponds and lakes, in pleasure grounds, these birds are little inferior to the swan, and it is chiefly for this purpose that they are kept. We have, however, seen them, and particularly the mixed breed, in farm yards.

THE TAME SWAN, OR MUTE SWAN.—The tame swan (*cygnus olor*) may perhaps come within the list of domestic birds, for though it lives and breeds at large on our rivers and sheets of water, it is not an indigenous species, in our island, nor is it one of our migratory visitors. Moreover, it is in all cases under ownership, and guarded by express laws relative to its preservation. It is, in fact, a "bird royal," in which no subject can have property, so long as it is on a public river or creek, except by an express grant.

The present species, in a wild condition, is a native of Siberia, north-eastern Europe, and the adjacent parts of Asia, migrating southwards in winter, when it occasionally visits Italy. On the Caspian Sea, through Asia Minor, Mesopotamia, and Syria, it is abundant

in winter; and swans unnumbered, as in the time of Homer, may still visit Cayster's* springs, and there "stretch their long necks and flap their rustling wings."

At what period the swan became reclaimed and naturalized in western Europe and the British Isles, we have no means of ascertaining, certainly it was at a remote date; and as the laws we have alluded to prove, this noble bird was held in peculiar esteem. From a digest of the British statutes relative to the swan in the Penny Cyclopædia, we take a few extracts, to show their general tendency. The crown alone has the right of granting a property in swans on a public river, and conceding this privilege a swan-mark is also granted, for distinguishing the particular "game" or flock of swans, from others on the same river. Sometimes the crown, instead of granting a swan-mark, confers the *still* further prerogative right of seizing within a certain district all white or adult swans *not* marked. "Thus the abbot of Abbotsbury, in Dorsetshire, had a game of wild swans in the estuary formed by the isle of Portland and the Chesil Bank. The swannery at Abbotsbury

* A river in Asia Minor near Ephesus.

is the largest in the kingdom, and though formerly much more extensive, it still numbers many hundreds of these birds, forming an object of considerable attraction and interest to those who visit this part of the coast. It is now vested in the earl of Ilchester, to whose ancestor it was granted on the dissolution of the monasteries."

The city of Oxford has a game of swans by prescription, but we do not know that any are now kept.

On the Thames, the Dyers' and Vintners' Company, with the crown, divide the games of swans between them. The royal mark on the beak is made on the skin of the upper mandible with a knife.

The Dyers' Company have the swan-mark consisting of a single notch or nick on one side of the beak; that of the Vintners' Company consists of a mark on each side of the beak. Hence the sign of the swan with two nicks, converted in the present day into two *necks*.

The adult male swan is called a cob, the adult female a pen, the young a cygnet. The cygnets when hatched are clothed with brownish gray down, and do not acquire

the white plumage in its perfect purity till the beginning of the third year. The female sits upon five, six, or eight eggs, and during the season of incubation, is sedulously attended by her mate, who, however, gentle and inoffensive at other times, becomes now furious if any one approach the breeding place, and advances with raised up plumes, and every demonstration of excitement, to the attack; nor is the assault of so large and powerful a bird, a trifling affair. A blow with its wing would be likely to inflict a severe injury.

In former times the swan was in high repute, and was to be found on the tables of the great, and no banquet of ceremony or state dinner was accounted complete, if swans were not included in the costly bill of fare.

The swan feeds on grain, various aquatic plants, and the herbage along the sides of lakes and rivers; it soon becomes very familiar.

The common tame swan is very long lived. Its windpipe is simple without any flexure.

Closely allied to the tame swan, or *cygnus olor*, and formerly confounded with it, is a species called by dealers the Polish swan. It is the *Cygnus immutabilis* of Mr. Yarrell, who

first pointed out its differential characters. In this species, the black tubercle at the base of the beak is small even in old males: the legs, the toes, and intervening webs are slate gray. The cygnets are of as pure a white as the adults, and consequently undergo no change of colouring. The windpipe is simple as in the tame swan; there are, however, many very marked differences in the osteological structure of the two birds, which have been pointed out by W. G. Pelerin, esq., in the Magazine of Nat. Hist. 1839, p. 179.

The Polish swan is a native of the north of Europe and the borders of the Baltic, and occasionally visits our island, sometimes even in considerable numbers. Young individuals when captured readily become tamed, and breed freely on sheets of water.

Of the other wild swans of Europe and Asia, we may enumerate the hooper, or whistling swan, (*cygnus ferus*—Ray; *cygnus musicus*—Bechstein.)

This species is spread throughout the whole northern range of Europe and Asia, breeding in the high northern latitudes, (occasionally in the Shetland and Orkney isles,) and migrating southwards in winter, even to the shores of

northern Africa. It visits our island, sometimes in considerable flocks, and their wild "hooping" note, when heard from a considerable elevation, as they make their way in the figure of a wedge, through "the cold thin atmosphere," is by no means unmusical. The ancient poets fabled the swan as uttering a mournfully musical prelude to its death. Perhaps this idea arose from their having heard the mingled voices of vast flocks of this species, as they winged their way to the rivers and lakes of Asia Minor.

These notes are produced by a peculiar conformation of the tube of the windpipe, which, before entering the chest, makes a long loop, which is received into a cavity hollowed out in the keel of the breastbone throughout its whole length.

The hooper will breed in captivity. Several specimens are living in the gardens of the Zoological Society.

The down and feathers of the hooper are very valuable, and consequently the bird is killed in great numbers, in Iceland, for the sake of these products, which are not only used by themselves for various purposes, but exchanged in barter. In August, when the

old birds have moulted their quill feathers, and are unable to fly, swan hunting commences. Many are ridden down by men mounted on small hardy horses, accustomed to swamps and bogs, which other horses would be unable to traverse; but most are killed by dogs, which are trained to seize them by the neck, and thus quickly despatch and secure them. Swan hunting in Iceland is a scene of bustle, animation, and excitement, and the more so as the interests of the natives are concerned in the success of this singular chase.

Bewick's Swan, (*Cygnus Bewickii*—Yarrell,) a species first distinguished by Mr. Yarrell, is smaller than the hooper, and differs besides in the structure of the windpipe, the great loop of which not only passes into the keel of the breastbone, which it traverses, but also passes into a cavity of the flat portion of the breastbone itself, where before being reflected back it takes a considerable curve, and then returns upon the trough of the keel. The beak also exhibits some differences.

The *cygnus Bewickii* is a native of the high northern regions of Europe and America, and probably also of Asia. It is only during severe winters that flocks of this species visit

our island. According to Mr. Blackwall, the call note of Bewick's swan, while on the wing, is loud and clamorous.

Turning to North America, besides Bewick's swan, the hooper, according to most naturalists, exists in the northern districts. But the prince of Canino, in his "Birds of Europe and North America," regards the species usually considered as identical with the hooper to be distinct, and registers it as the *cygnus Americanus* of Sharpless. How far he is correct is yet a question. There is, however, a definite species, the trumpeter swan, (*cygnus buccinator,*) undoubtedly peculiar to North America, and which is the common swan of the fur countries, whence its skins are imported in great numbers into England. It is the species that furnishes the principal part of the swan's down of commerce, and also swan quills.

The breeding places of the trumpeter swan are chiefly within the arctic circle, whence it migrates southwards on the approach of winter, preceding the flocks of wild geese. The fold of the windpipe in this species differs from that both of the hooper and Bewick's swan.

Of the black swan of Australia, and the

black-necked swan of Chili, we shall say nothing; indeed, our notice of the wild swans of the northern hemisphere is intended rather to give a list of the species allied more or less to the tame or mute swan, than to enter into the minutiæ of their history.

Here, then, we may close our account of the birds legitimately coming under the head of domestic poultry. A few words may be permitted on another subject. We commenced the work with a reference to the early history of man, and endeavoured to show from several facts, and among others, from his availing himself, even at the outset of his career of labour, of the services of such animals as would assist him by their docility, strength, or intelligence, or supply him with food and clothing, that a savage condition is alien to his nature. This is emphatically declared by Scripture. "God created man in his own image," and though that image is defaced, it is not obliterated; nor has he lost that "dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth," with which the Creator invested him. This dominion consists not only in superiority, connected with the

possession of intellect, of reason, but arises also from the total difference as to the end and aim of his creation—his future destiny and condition. He is destined for immortality, he is gifted with reason—a knowledge of good and evil, and language in which to express his ideas, and worship the Giver of every good and perfect gift. When we contemplate man in this light, we cannot but see his position in creation; but he holds another position,—a position before his God who is his Creator, and will be his Judge. Is this position one of perfect innocence and holiness? No! Man fell from his first estate and lost that position, and the human race now stands before God, as guilty, as criminal, as condemned by the law, to break one tittle of which is to break the whole. Man is amenable to punishment; and is there means of escape? Yes, he can escape, for the door of mercy is not closed; nay, he is invited to flee for refuge from the wrath to come, and so plain is the path, that the wayfaring man cannot err therein. It is through the atonement made by our Lord Jesus Christ, who "bore our sins in his own body on the tree," when he in whom the fulness of the Godhead dwelt bodily, was crucified, offering

up himself as a sacrifice for the guilt of the world;—"he was wounded for our transgressions, he was bruised for our iniquities: the chastisement of our peace was upon him; and by his stripes we are healed. The Lord has laid on him the iniquity of us all," Isa. liii. 5, 6. It is through faith in the great atonement which Jesus made when he gave up his life as a ransom for sinners, that man can escape the judgment of God. This faith must be a lively principle implanted in him by the holy Spirit, which God has promised to those who ask in true sincerity. (See Luke xi. 13.) "There is therefore now no condemnation to them which are in Christ Jesus, who walk not after the flesh, but after the Spirit." Rom. viii. 1.

It was on this atonement, promised to Adam, after his fall, that the prophets and holy men of old depended,—but they saw as through a glass, darkly. To us a purer light is given, a bright revelation full of hope and joy is made, and while it humbles our pride, or self-sufficiency, and shows us our guilt, it offers us pardon and peace, and the bliss of heaven, where the Redeemer, once rejected by men, sits on a throne of glory.

How transcendently joyful are the pros-

pects of the Christian! But all are not Christians even among those who claim to be so accounted, and whole nations are involved in worse than Egyptian darkness,—the darkness of the soul. Yet the day will come, in which all nations shall be brought to the knowledge of the truth, for to the Messiah is promised the heathen for an inheritance, and the uttermost parts of the earth for a possession. (Psalm ii. 8.) Such, then, is the exaltation upon earth, to which the Divine decree has appointed the human race. Even now the day is brightening; Christianity can number among its sincere professors men of every clime, from the ice-bound north, to the sunny isles of the southern seas; the skin-clad Greenlander, familiar with the waves; the hardy Russ and Sclavonian; the Anglo, the Frank, the Hindoo, the Negro, the red rover of the American forest, and the fierce Polynesian, once an idolater and a cannibal. Surely Providence is bringing the great work to pass, when wars, and cruelty, and oppression shall cease, and "the knowledge of the Lord shall cover the earth as the waters cover the sea."

THE RELIGIOUS TRACT SOCIETY: INSTITUTED 1799.